Table 1 (mill base)

raw materials	rate (weight(kg))
varnish(A)	24
titanium oxide	8
iron oxide yellow	0.05
carbon black	0.01
calcium carbonate	6
talc	3
butyl acetate	11

Table 2 (dissolution)

raw materials	rate (weight(kg))
varnish(A)	33
toluene	13
butyl acetate	11
cyclohexanone	10
silicone additive	0.3

Table 3 (mill base)

raw materials	rate (weight(kg))
varnish(B)	24
titanium oxide	8
iron oxide yellow	0.05
carbon black	0.01
calcium carbonate	6
talc	3
toluene	10
butyl acetate	11

Table 4 (dissolution)

raw materials	rate (weight(kg))
varnish(B)	33
toluene	9
butyl acetate	11
cyclohexanone	10
silicone additive	0.3

Table 5 (mill base)

raw materials	rate (weight(kg))
varnish(C)	24
titanium oxide	8
iron oxide yellow	0.05
carbon black	0.01
calcium carbonate	6
talc	3
toluene	10
butyl acetate	11

(note) vanish(C) is styrene-modified acrylic resin varnish of Dainippon Ink and Chemicals Inc,.(Commercial name and grade; Acrydic A-157 (solid content of 50%)

Table 6 (melting)

raw materials	rate (weight(kg))
varnish(C)	30
toluene	5
silicone additive	0.3

Table 14

raw materials	rate (weight(kg))
varnish(A)	50
red oxide	12
calcium carbonate	10
talc	4
bentone SD-1	0.3
butyl acetate	10

Table 16

raw materials	rate (weight(kg))
varnish(C)	35
red oxide	12
calcium carbonate	10
talc	4
bentone SD-1	0.3
butyl acetate	10

Table 7 Table showing mixing rate of thinner

(item) thinner No / raw material (solvent)	mixing rate (weight (kg)) thinner No S1	thinner No S2	thinner No S3	thinner No S4
toluene	60	50	60	20
methylisobutylketone	11	—	—	—
isobutanol	25	—	—	—
cyclohexanone	4	—	5	—
isopropyl alcohol	—	40	—	80
butylcellosolve	—	10	—	—
butyl acetate	—	—	35	—
(total)	100	100	100	100

Table 8

Test item, test method, requird value and unit of Coating film

	test method	required value(reference)	unit
1. coatability(appearance),luster,surface irregularity,wrinkle and so on	accordance with JIS K 5400 7. 1	nothing	
2. paint film property			
(1) dry thickness of paint film		10 μm or over	μm
(2) pencil hardness test	accordance with JIS K 5400 8.4.2		
(3) relative specular glossiness at 60 degree	accordavce with JIS K 5400 6.7		
(4) cross hatch test at 90 degree	accordance with JIS K 5400 8.5.2	adhesion 100/100	
(7) hot water dip test	accordance with JIS K 5400 8.19 (40℃,48hr.dipping) cross hatch test after hot water dip test cross cut test after hot water dip test	no abnormality in gloss,discoloration, bulging and so on adhesion 100/100 peeling width 1mm or below	mm
(8) humidity test	accordance with JIS K 5400 9.2.2 (98%RH 50℃,72hr.) cross hatch test after humidity test cross cut test after humidity test	no abnormality in gloss,discoloration, bulging and so on adhesion 100/100 peeling width 1mm or below	mm
(9) salt water dip test	accordance with JIS K 5400 9.23 (3%NaCl water solution 40℃,72hr. Dipping) cross hatch test after salt water test cross cut test after salt water test	no abnormality in gloss,discoloration, bulging and so on adhesion 100/100 peeling width 1mm or below	mm
(10) impact resistance test	1/2inch Φ×300g×50cm	nothing of crack,peeling and so on	
(11) abrasion resistance test	CS10/500g/1000rpm	150mgf or below	mg
(12) weather resistance test	JIS K 5400 9.7.2 100hr.	ΔE=3 or below	

Table 9 Table showing test item, test method, required value and unit of Molding Material

test item	test method	required value(reference)	unit
3. fundamental properties of material			
(1) density	JIS K 6911 5.2		g/ml
4. Thermal properties of material			
(1) heat deformation temperature (*27)	ATEM-D648		℃
(2) Vicat softening point temperature	ATEM-D1525		℃
(3-1) melt flow rate	JIS K 7210		g/10min
(3-3) melt flow rate	ISO-R1133		g/10min
(3-3) melt flow rate	250℃ 10kg		g/10min
(memo)mesurements of melt flow rate vary in response to varieties of resin			
5. Mechanical properties of material			
(1) tensile break strength	ATEM-D638		kg/cm²
(2) elongation at break	ATEM-D638		%
(3) bending strength	ATEM-D790		kg/cm²
(4) modulus in flexure	ATEM-D790		kg/cm²
(5) Izod impact strength (*28)	ATEM-D256		kg-cm/cm
(6) Rockwell hardness (*29)	R scale		
(memo)mesurements of Rockwell hardness vary in response to varieties of resin	L scale		
7. The others			
(1) water absorption (*30)	JIS K 7209		%

(memo) *27) load-deflection temperature18. .6kg load

*28) notched

*29) Rockwell hardness ;1/4"strip (without surface finish)
transversed measuring section at gate side,R scale or L scale

*30) measurement of variation in weight of dumb-bell specimen after leaving it 24 hours under water of23℃

Table 10

item / test (examination) item	molding material ; ABS resin paint ; paint #30 fresh molding by virgin material *2)	first recycle *3)	second recycle *4)	third recycle *5)
1. Molding material				
1-1 thermal properties				
heat deformation temperature ℃	80.9	82.3	83	82.4
Vicat softening point temperature ℃	105.4	104.5	103.9	103.4
melt flow rate	25.8	30.6	33.2	35.1
1-2 mechanical properties				
tensile strength kg/cm²	420	420	420	420
bending strength kg/cm²	700	710	720	720
elongation %	21	19	21	18
modulus in flexure kg/cm²	23800	26500	26500	27100
izod impact strength kg-cm/cm	14.9	13.6	11.9	10.5
2. Coatability				
2-1 appearance		○	○	○
2-2 paint film properties				
pencil hardness test		HB or over	HB or over	HB or over
cross hatch test		100/100	100/100	100/100
crosscut test		1mm or less	1mm or less	mm or less
hot water dip test		no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test		no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
salt water dip test		no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon tables 8 and 9.

Table 11

item / test (examination) item	molding material ; ABS resin paint ; paint #10			
	fresh molding by virgin material *2)	first recycle *3)	second recycle *4)	third recycle *5)
1. Molding material				
1-1 thermal properties				
heat deformation temperature ℃	80.9	85.2	83.6	83.4
Vicat softening point temperature ℃	105.4	105.9	105.9	106.5
melt flow rate	25.8	28.2	29.1	30.4
1-2 mechanical properties				
tensile strength kg/cm²	420	430	430	430
bending strength kg/cm²	700	720	720	720
elongation %	21	17	17	17
modulus in flexure kg/cm²	23800	24500	26600	26800
izod impact strength kg-cm/cm	14.9	13.2	11.6	9.5
2. Coatability				
2-1 appearance		○	○	○
2-2 paint film properties				
pencil hardness test		HB or over	HB or over	HB or over
cross hatch test		100/100	100/100	100/100
crosscut test		1mm or less	1mm or less	1mm or less
hot water dip test		no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test		no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
salt water dip test		no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon tables 8 and 9.
*2), *3), *4) and *5) are the same as those described in 4th Example.

Table 12

item / test (examination) item	molding material; HIPS resin [paint : paint #20] fresh molding by virgin material *2)	first recycle *3)	second recycle *4)	third recycle *5)
1. Molding material				
1-1 thermal properties				
heat deformation temperature ℃	83.5	78.5	76.4	74.5
vicat softening point temperature ℃	104.9	100.4	97.4	96.3
melt flow rate	2.8	3.9	4.6	5.8
1-2 mechanical properties				
tensile strength kg/cm²	290	290	290	290
bending strength kg/cm²	490	520	540	540
elongation %	53	41	35	32
modulus in flexure kg/cm²	24500	23800	23900	23700
izod impact strength kg-cm/cm	6.9	6.3	5.8	5.3
2. Coatability				
2-1 appearance		○	○	○
2-2 paint film properties				
pencil hardness test		HB or over	HB or over	HB or over
cross hatch test		100/100	100/100	100/100
crosscut test		1mm or less	1mm or less	1mm or less
hot water dip test		no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test		no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
salt water dip test		no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon tables 8 and 9.
*2), *3), *4) and *5) are the same as those described in 4th Example.

Table 13

test (examination) item \ item	molding material; HIPS resin paint : paint #10			
	fresh molding by virgin material *2)	first recycle *3)	second recycle *4)	third recycle *5)
1. Molding material				
1−1 thermal properties				
heat deformation temperature ℃	83.5	82.7	80.8	79.5
vicat softening point temperature ℃	104.9	104.6	104.3	103.6
melt flow rate	2.8	3.4	3.4	3.6
1−2 mechanical properties				
tensile strength kg/cm²	290	300	300	300
bending strength kg/cm²	490	530	540	560
elongation %	53	45	34	35
modulus in flexure kg/cm²	24500	23700	24000	24100
izod impact strength kg-cm/cm	6.9	6.5	5.8	5.3
2. Coatability				
2−1 appearance		○	○	○
2−2 paint film properties				
pencil hardness test		HB or over	HB or over	HB or over
cross hatch test		100/100	100/100	100/100
crosscut test		1mm or less	1mm or less	1mm or less
hot water dip test		no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test		no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
salt water dip test		no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon tables 8 and 9.
*2), *3), *4)and *5) are the same as those described in 4th Example.

Table 18

raw materials	rate (weight(kg))
varnish(B)	35
r d oxide	12
calcium carbonate	10
talc	4
bentone SD-1	0.3
butyl acetate	10

Table 57 varnish(D)

raw materials	rate (weight(kg))
amilanMC8000	27
methanol	56
normal butanol	13
purified water	4
(total)	100

Table 58 (mill base)

raw materials	rate (weight(kg))
varnish(D); (refer to table57)	30
titanium oxide	10
iron oxide yellow	0.06
carbon black	0.01
calcium carbonate	6
talc	3.5
(total)	49.57

Table 59 (dissolution)

raw materials	rate (weight(kg))
mill base; (refer to table58)	49.57
varnish(D); (refer to table57)	40
methanol	5.23
butylcellosolve	5
homogenole L-100	0.2
(total)	100

Tabl 80 (mill bas)

raw materials	rat (weight(kg))
varnish(C)	24
refused ton r	10
talc	10
toluene	10
butyl acetate	11

Table 81 (dissolution)

raw materials	rate (weight(kg))
varnish(C)	30
toluene	5
silicon type addition agent	0.3

Tabl 15

item / test (examination) item	molding material; ABS resin ink ; ink #35	
	fresh molding by virgin material *13)	first recycle *14)
1. Printability		
1-1 appearance	○	○
1-2 ink film properties		
pencil hardness test	HB or over	HB or over
cross hatch test	100/100	100/100
crosscut test	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100
salt water dip test	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.

Table 17

item / test (examination) item	molding material; ABS resin ink ; ink #15	
	fresh molding by virgin material *13)	first recycle *14)
1. Printability		
1-1 appearance	○	○
1-2 ink film properties		
pencil hardness test	HB or over	HB or over
cross hatch test	100/100	100/100
crosscut test	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100
salt water dip test	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.

Table 20

item / test (examination) item	molding material; HIPS resin ink ; ink #15	
	fresh molding by virgin material *13)	first recycle *14)
1. Printability		
1-1 appearance	○	○
1-2 ink film properties		
pencil hardness test	HB or over	HB or over
cross hatch test	100/100	100/100
crosscut test	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100
salt water dip test	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.
*13) and *14) are the same as those described in 8th Example.

Table 19

item / test (examination) item	molding material; HIPS resin ink ; ink #25	
	fresh molding by virgin material *13)	first recycle *14)
1. Printability		
1-1 appearance	○	○
1-2 ink film properties		
pencil hardness test	HB or over	HB or over
cross hatch test	100/100	100/100
crosscut test	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100
salt water dip test	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.
*13) and *14) are the same as those described in 8th Example.

Table 21

item / failure phenomena	molding material; ABS resin paint ; paint #30		
	first molding *15)	second molding *16)	third molding *17)
total molding number	617	258	265
scorch failure	0	0	2
failure by contamination or foreign matter	29	1	2
silver streak	0	0	0
short shot	8	3	44
sink mark	40	0	0
jetting	0	0	0
cracks	0	0	0

Table 22

item / failure phenomena	molding material; ABS resin paint ; paint #10		
	first molding *15)	second molding *16)	third molding *17)
total molding number	617	252	212
scorch failure	0	0	0
failure by contamination or foreign matter	29	11	0
silver streak	0	0	0
short shot	8	2	2
sink mark	40	0	0
jetting	0	0	0
cracks	0	0	0

*15),*16) and *17) are the same as those described in 12th Example.

Table 23

item / failure phenomena	molding material; HIPS resin paint ; paint #20		
	first molding *15)	second molding *16)	third molding *17)
total molding number	589	206	202
scorch failure	0	0	0
failure by contamination or foreign matter	19	0	0
silver streak	0	6	0
short shot	32	0	1
sink mark	0	0	44
jetting	0	0	0
cracks	14	15	0

*15),*16) and *17) are the same as those described in 12th Example.

Table 24

item / failure phenomena	molding material; HIPS resin paint ; paint #10		
	first molding *15)	second molding *16)	third molding *17)
total molding number	589	235	202
scorch failure	0	0	0
failure by contamination or foreign matter	19	0	0
silver streak	0	0	0
short shot	32	11	0
sink mark	0	3	0
jetting	0	0	0
cracks	14	11	0

*15),*16) and *17) are the same as those described in 12th Example.

Table 25

item / test (examination) item	molding materials; modified PPO(E) resin paint ; paint #10 (comparative example)			
	fresh molding by virgin material *2)	first recycle *3)	second recycle *4)	third recycle *5)
1. Coatability				
1-1 appearance	○	○	○	○
1-2 paint film properties				
pencil hardness test	HB or over	HB or over	HB or over	HB or over
cross hatch test	100/100	100/100	100/100	100/100
crosscut test	1mm or less	1mm or less	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
salt water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.
*2), *3), *4) and *5) are the same as those described in 4th Example.

Table 26

item / failure phenomena	molding material; modified PPO(E) paint ; paint #10		
	first molding *15)	second molding *16)	third molding *17)
total molding number	603	520	310
scorch failure	5	0	0
failure by contamination or foreign matter	2	2	6
silver streak	11	9	5
short shot	7	3	0
sink mark	0	0	2
jetting	0	0	0
cracks	1	0	0

*15),*16) and *17) are the same as those described in 12th Example.

Table 28

item / failure phenomena	molding material; modified PPO(E) paint ; paint #20		
	first molding *15)	second molding *16)	third molding *17)
total molding number	580	500	385
scorch failure	6	0	0
failure by contamination or foreign matter	6	3	4
silver streak	10	0	0
short shot	4	4	6
sink mark	0	0	0
jetting	7	1	0
cracks	1	0	0

*15),*16) and *17) are the same as those described in 12th Example.

Table 27

item / test (examination) item	molding materials; modified PPO(E) resin paint ; paint #20 (comparative example)			
	fresh molding by virgin material *2)	first recycle *3)	second recycle *4)	third recycle *5)
1. Coatability				
1-1 appearance	O	O	O	O
1-2 paint film properties				
pencil hardness test	HB or over	HB or over	HB or over	HB or over
cross hatch test	100/100	100/100	100/100	100/100
crosscut test	1mm or less	1mm or less	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
salt water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.
*2), *3), *4)and *5) are the same as those described in 4th Example.

Table 29

item / test (examination) item	moding material; ABS resin paint; paint #10 (comparative example)	molding material; PC resin paint; paint #10 (comparative example)	molding material; PC/ABS resin paint ; paint #10		
	fresh molding by virgin material *2)	fresh molding by virgin material *2)	first recycle *3)	second recycle *4)	third recycle *5)
1. Coatability					
1-1 appearance	O	O	O	O	O
1-2 paint film properties					
pencil hardness test	HB or over	HB or over	HB or over	HB or over	HB or over
cross hatch test	100/100	100/100	100/100	100/100	100/100
crosscut test	1mm or less	1mm or less	1mm or less	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
salt water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.

*2),*3),*3) and *5) are the same as those described in 4th Example.

Table 30

item / failure phenomena	molding material; ABS resin paint; paint #10 (comparative example)	molding material; PC resin paint; paint #10 (comparative example)	molding material; PC/ABS resin paint ; paint #10		
	fresh molding by virgin material *15)	fresh molding by virgin material *15)	first molding *18)	second molding *19)	third molding *20)
total molding number	578	511	607	428	415
scorch failure	3	6	3	0	2
failure by contamination or foreign matter	2	1	9	3	2
silver streak	10	11	9	0	1
short shot	11	7	7	2	20
sink mark	0	0	0	0	0
jetting	0	0	0	0	0
cracks	3	0	3	1	0

*15) is the same as those described in 12th Example.

*18),*19) and *20) show case of molding PC/ABS blend polymer (blend resin).

Table 31

item / test (examination) item	molding material; ABS resin paint; paint #30 (comparative example)	molding material; PC resin paint; paint #30 (comparative example)	molding material; PC/ABS resin paint ; paint #30		
	fresh molding by virgin material *2)	fresh molding by virgin material *2)	first recycle *3)	second recycle *4)	third recycle *5)
1. Coatability					
1-1 appearance	○	○	○	○	○
1-2 paint film properties					
pencil hardness test	HB or over	HB or over	HB or over	HB or over	HB or over
cross hatch test	100/100	100/100	100/100	100/100	100/100
crosscut test	1mm or less	1mm or less	1mm or less	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
salt water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.

*2),*3),*3) and *5) are the same as those described in 4th Example.

Table 32

item / failure phenomena	molding material; ABS resin paint; paint #30 (comparative example)	molding material; PC resin paint; paint #30 (comparative example)	molding material; PC/ABS resin paint ; paint #30		
	fresh molding by virgin material *15)	fresh molding by virgin material *15)	first molding *18)	second molding *19)	third molding *20)
total molding number	588	597	537	471	409
scorch failure	5	7	3	7	5
failure by contamination or foreign matter	3	7	7	0	5
silver streak	10	13	13	9	0
short shot	10	5	5	7	16
sink mark	0	0	0	0	0
jetting	0	0	0	0	0
cracks	5	0	4	1	0

*15) is the same as those described in 12th Example.

*18),*19) and *20) show case of molding PC/ABS blend polymer (blend resin).

Table 33

item / test (examination) item	molding material; ABS resin paint; paint #10 (comparative example)	molding material; PC resin paint; paint #30 (comparative example)	molding material; PC/ABS resin paint ; paint #10		
	fresh molding by virgin material *2)	fresh molding by virgin material *2)	first recycle *3)	second recycle *4)	third recycle *5)
1. Coatability					
1-1 appearance	O	O	O	O	O
1-2 paint film properties					
pencil hardness test	HB or over	HB or over	HB or over	HB or over	HB or over
cross hatch test	100/100	100/100	100/100	100/100	100/100
crosscut test	1mm or less	1mm or less	1mm or less	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
salt water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.

*2),*3),*3) and *5) are the same as those described in 4th Example.

Table 34

item / failure phenomena	molding material; ABS resin paint; paint #10 (comparative example)	molding material; PC resin paint; paint #30 (comparative example)	molding material; PC/ABS resin paint; paint #10		
	fresh molding by virgin material *15)	fresh molding by virgin material *15)	first molding *18)	second molding *19)	third molding *20)
total molding number	611	517	559	397	272
scorch failure	9	5	7	0	5
failure by contamination or foreign matter	9	10	3	2	5
silver streak	13	13	12	2	0
short shot	1	3	6	1	11
sink mark	0	0	0	0	0
jetting	0	0	0	0	0
cracks	0	0	5	1	3

*15) is the same as those described in 12th Example.

*18),*19) and *20) show case of molding PC/ABS blend polymer (blend resin).

Table 35

item / test (examination) item	molding material; ABS resin paint; paint #30 (comparative example)	molding material; PC resin paint; paint #10 (comparative example)	molding material; PC/ABS resin paint ; paint #30		
	fresh molding by virgin material *2)	fresh molding by virgin material *2)	first recycle *3)	second recycle *4)	third recycle *5)
1. Coatability					
1-1 appearance	○	○	○	○	○
1-2 paint film properties					
pencil hardness test	HB or over	HB or over	HB or over	HB or over	HB or over
cross hatch test	100/100	100/100	100/100	100/100	100/100
crosscut test	1mm or less	1mm or less	1mm or less	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
salt water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.
*2),*3),*3) and *5) are the same as those described in 4th Example.

Table 36

item / failure phenomena	molding material; ABS resin paint; paint #30 (comparative example)	molding material; PC resin paint; paint #10 (comparative example)	molding material; PC/ABS resin paint; paint #30		
	fresh molding by virgin material *15)	fresh molding by virgin material *15)	first molding *18)	second molding *19)	third molding *20)
total molding number	497	523	601	337	291
scorch failure	7	9	7	3	0
failure by contamination or foreign matter	7	1	9	0	1
silver streak	9	14	9	0	0
short shot	13	2	11	7	18
sink mark	0	0	0	0	0
jetting	0	0	0	0	0
cracks	1	0	5	1	1

*15) is the same as those described in 12th Example.

*18),*19) and *20) show case of molding PC/ABS blend polymer (blend resin).

Table 37

item / test (examination) item	molding material; ABS resin paint; paint #10 (comparative example)	molding material; PC resin paint; paint #10 (comparative example)	molding material; PC/ABS resin paint ; paint #30		
	fresh molding by virgin material *2)	fresh molding by virgin material *2)	first recycle *3)	second recycle *4)	third recycle *5)
1. Coatability					
1-1 appearance	○	○	○	○	○
1-2 paint film properties					
pencil hardness test	HB or over	HB or over	HB or over	HB or over	HB or over
cross hatch test	100/100	100/100	100/100	100/100	100/100
crosscut test	1mm or less	1mm or less	1mm or less	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
salt water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.
*2),*3),*3) and *5) are the same as those described in 4th Example.

Table 38

item / failure phenomena	molding material; ABS resin paint; paint #10 (comparative example)	molding material; PC resin paint; paint #10 (comparative example)	molding material; PC/ABS resin paint ; paint #30		
	fresh molding by virgin material *15)	fresh molding by virgin material *15)	first molding *18)	second molding *19)	third molding *20)
total molding number	473	517	566	411	324
scorch failure	1	5	7	2	1
failure by contamination or foreign matter	2	4	11	10	1
silver streak	9	15	9	0	0
short shot	11	11	13	13	22
sink mark	0	0	0	0	0
jetting	0	0	0	0	0
cracks	2	0	5	0	1

*15) is the same as those described in 12th Example.

*18),*19) and *20) show case of molding PC/ABS blend polymer (blend resin).

Table 39

item / test (examination) item	molding material; ABS resin paint; paint #30 (comparative example)	molding material; PC resin paint; paint #30 (comparative example)	molding material; PC/ABS resin paint ; paint #10		
	fresh molding by virgin material *2)	fresh molding by virgin material *2)	first recycle *3)	second recycle *4)	third recycle *5)
1. Coatability					
1-1 appearance	○	○	○	○	○
1-2 paint film properties					
pencil hardness test	HB or over	HB or over	HB or over	HB or over	HB or over
cross hatch test	100/100	100/100	100/100	100/100	100/100
crosscut test	1mm or less	1mm or less	1mm or less	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
salt water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.

*2),*3),*3) and *5) are the same as those described in 4th Example.

Table 40

item / failure phenomena	molding material; ABS resin paint; paint #30 (comparative example)	molding material; PC resin paint; paint #30 (comparative example)	molding material; PC/ABS resin paint; paint #10		
	fresh molding by virgin material *15)	fresh molding by virgin material *15)	first molding *18)	second molding *19)	third molding *20)
total molding number	529	499	519	397	303
scorch failure	5	9	5	3	1
failure by contamination or foreign matter	7	7	2	5	4
silver streak	2	4	11	0	0
short shot	7	11	18	9	11
sink mark	0	0	0	0	0
jetting	0	0	0	0	0
cracks	7	0	3	1	2

*15) is the same as those described in 12th Example.

*18),*19) and *20) show case of molding PC/ABS blend polymer (blend resin).

Table 41

item / test (examination) item	molding material; ABS resin paint; paint #10 (comparative example)	molding material; PC resin paint; paint #30 (comparative example)	molding material; PC/ABS resin paint ; paint #10		
	fresh molding by virgin material *2)	fresh molding by virgin material *2)	first recycle *3)	second recycle *4)	third recycle *5)
1. Coatability					
1-1 appearance	○	○	○	○	○
1-2 paint film properties					
pencil hardness test	HB or over	HB or over	HB or over	HB or over	HB or over
cross hatch test	100/100	100/100	100/100	100/100	100/100
crosscut test	1mm or less	1mm or less	1mm or less	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
salt water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.

*2),*3),*3) and *5) are the same as those described in 4th Example.

Table 42

item / failure phenomena	molding material; ABS resin paint; paint #10 (comparative example)	molding material; PC resin paint; paint #30 (comparative example)	molding material; PC/ABS resin paint; paint #10		
	fresh molding by virgin material *15)	fresh molding by virgin material *15)	first molding *18)	second molding *19)	third molding *20)
total molding number	556	571	576	412	297
scorch failure	9	6	8	8	3
failure by contamination or foreign matter	7	3	8	3	3
silver streak	2	8	4	5	1
short shot	11	15	20	14	9
sink mark	0	0	0	0	0
jetting	0	0	0	0	0
cracks	1	0	1	0	1

*15) is the same as those described in 12th Example.

*18),*19) and *20) show case of molding PC/ABS blend polymer (blend resin).

Table 43

item / test (examination) item	molding material; ABS resin paint; paint #30 (comparative example)	molding material; PC resin paint; paint #10 (comparative example)	molding material; PC/ABS resin paint ; paint #10		
	fresh molding by virgin material *2)	fresh molding by virgin material *2)	first recycle *3)	second recycle *4)	third recycle *5)
1. Coatability					
1-1 appearance	○	○	○	○	○
1-2 paint film properties					
pencil hardness test	HB or over	HB or over	HB or over	HB or over	HB or over
cross hatch test	100/100	100/100	100/100	100/100	100/100
crosscut test	1mm or less	1mm or less	1mm or less	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
salt water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.

*2),*3),*3) and *5) are the same as those described in 4th Example.

Table 44

item / failure phenomena	molding material; ABS resin paint; paint #30 (comparative example)	molding material; PC resin paint; paint #10 (comparative example)	molding material; PC/ABS resin paint; paint #10		
	fresh molding by virgin material *15)	fresh molding by virgin material *15)	first molding *18)	second molding *19)	third molding *20)
total molding number	556	584	568	438	339
scorch failure	5	6	2	3	4
failure by contamination or foreign matter	2	2	4	4	1
silver streak	3	13	6	5	4
short shot	9	2	11	6	15
sink mark	0	0	0	0	0
jetting	0	0	0	0	0
cracks	3	0	2	1	1

*15) is the same as those described in 12th Example.

*18),*19) and *20) show case of molding PC/ABS blend polymer (blend resin).

Table 45

item / test (examination) item	molding material; ABS resin paint; paint #10 (comparative example)	molding material; ABS/PET resin paint ; paint #10		
	fresh molding by virgin materil *2)	first recycle *6A)	second recycle *7A)	third recycle *8A)
1. Coatability				
1-1 appearance	O	O	O	O
1-2 paint film properties				
pencil hardness test	HB or over	HB or over	HB or over	HB or over
cross hatch test	100/100	100/100	100/100	100/100
crosscut test	1mm or less	1mm or less	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
salt water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.
*2) is the same as that in the 4th Example.
*6A), *7A) and *8A) show content wherein reproduced pellets of PET resin are added after crushing and pelletizing virgin material in content of *3), *4) and *5) in 4th Example.

Table 46

item / failure phenomena	molding material; ABS/PET resin paint ; paint #10		
	first molding *15D)	second molding *21)	third molding *22)
total molding number	496	408	312
scorch failure	5	8	3
failure by contamination or foreign matter	92	69	53
silver streak	6	11	8
short shot	0	4	3
sink mark	0	0	0
jetting	0	0	0
cracks	0	4	1

*15D) shows case of mixing resins with each other and molding.. *21) shows case of first-recycling material in *15D). *22) shows case of second-recycling material in *15D).

Table 48

item / failure phenomena	molding material; ABS/PET resin paint ; paint #30		
	first molding *15D)	second molding *21)	third molding *22)
total molding number	453	349	222
scorch failure	2	3	4
failure by contamination or foreign matter	108	84	53
silver streak	10	6	2
short shot	8	3	8
sink mark	0	0	0
jetting	0	0	0
cracks	2	2	2

*15D) shows case of mixing resins with each other and molding.. *21) shows case of first-recycling material in *15D). *22) shows case of second-recycling material in *15D).

Table 47

item / test (examination) item	molding material; ABS resin paint; paint #30 (comparative example)	molding material; ABS/PET resin paint ; paint #30		
	fresh molding by virgin material *2)	first recycle *6A)	second recycle *7A)	third recycle *8A)
1. Coatability				
1-1 appearance	O	O	O	O
1-2 paint film properties				
pencil hardness test	HB or over	HB or over	HB or over	HB or over
cross hatch test	100/100	100/100	100/100	100/100
crosscut test	1mm or less	1mm or less	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
salt water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.
*2) is the same as that in the 4th Example.
*6A), *7A) and *8A) show content wherein reproduced pellets of PET resin are added after crushing and pelletizing virgin material in content of *3), *4) and *5) in 4th Example.

Table 49

item / test (examination) item	molding material; ABS resin paint; paint #10 (comparative example)	molding material; ABS/PMMA resin paint ; paint #10		
	fresh molding by virgin material *2)	first recycle *6B)	second recycle *7B)	third recycle *8B)
1. Coatability				
1-1 appearance	O	O	O	O
1-2 paint film properties				
pencil hardness test	HB or over	HB or over	HB or over	HB or over
cross hatch test	100/100	100/100	100/100	100/100
crosscut test	1mm or less	1mm or less	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
salt water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.
*2) is the same as that in the 4th Example.
*6B), *7B) and *8B) show content wherein reproduced pellets of PMMA resin are added after crushing and pelletizing virgin material in content of *3), *4) and *5) in 4th Example.

Table 50

item / failure phenomena	molding material; ABS/PMMA resin paint ; paint #10		
	first molding *15D)	second molding *21)	third molding *22)
total molding number	427	386	243
scorch failure	5	3	3
failure by contamination or foreign matter	4	4	5
silver streak	12	3	4
short shot	9	2	4
sink mark	0	0	0
jetting	0	0	0
cracks	1	0	0

*15D) shows case of mixing resins with each other and molding.. *21) shows case of first-recycling material in *15D). *22) shows case of second-recycling material in *15D).

Table 52

item / failure phenomena	molding material; ABS/PMMA resin paint ; paint #30		
	first molding *15D)	second molding *21)	third molding *22)
total molding number	538	419	334
scorch failure	2	3	0
failure by contamination or foreign matter	2	4	1
silver streak	7	0	0
short shot	2	5	7
sink mark	0	0	0
jetting	0	0	0
cracks	0	2	3

*15D) shows case of mixing resins with each other and molding.. *21) shows case of first-recycling material in *15D). *22) shows case of second-recycling material in *15D).

Table 51

test (examination) item \ item	molding material; ABS resin paint; paint #30 (comparative example)	molding material; ABS/PMMA resin paint ; paint #30		
	fresh molding by virgin material *2)	first recycle *6B)	second recycle *7B)	third recycle *8B)
1. Coatability				
1-1 appearance	○	○	○	○
1-2 paint film properties				
pencil hardness test	HB or over	HB or over	HB or over	HB or over
cross hatch test	100/100	100/100	100/100	100/100
crosscut test	1mm or less	1mm or less	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
salt water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.
*2) is the same as that in the 4th Example.
*6B), *7B) and *8B) show content wherein reproduced pellets of PMMA resin are added after crushing and pelletizing virgin material in content of *3), *4) and *5) in 4th Example.

Table 53

item / test (examination) item	molding matrial; HIPS resin paint; paint #10 (comparative example)	molding material; HIPS/formed PS resin paint ; paint#10		
	fresh molding by virgin material *2)	first recycle *6C)	second recycle *7C)	third recycle *8C)
1. Coatability				
1-1 appearance	○	○	○	○
1-2 paint film properties				
pencil hardness test	HB or over	HB or over	HB or over	HB or over
cross hatch test	100/100	100/100	100/100	100/100
crosscut test	1mm or less	1mm or less	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
salt water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.
*2) is the same as that in the 4th Example.
*6C), *7C) and *8C) show content wherein reproduced pellets of foamed PS resin are added after crushing and pelletizing virgin material in content of *3), *4) and *5) in 4th Example.

Table 54

item / failure phenomena	molding material; HIPS/foamed PS paint ; paint #10		
	first molding *15D)	second molding *21)	third molding *22)
total molding number	496	341	269
scorch failure	32	28	33
failure by contamination or foreign matter	212	147	122
silver streak	11	1	1
short shot	3	4	1
sink mark	0	0	0
jetting	0	0	0
cracks	0	2	6

*15D) shows case of mixing resins with each other and molding.. *21) shows case of first-recycling material in *15D). *22) shows case of second-recycling material in *15D).

Table 56

item / failure phenomena	molding material; HIPS/foamed PS paint ; paint #20		
	first molding *15D)	second molding *21)	third molding *22)
total molding number	543	387	211
scorch failure	123	93	52
failure by contamination or foreign matter	261	205	113
silver streak	11	13	10
short shot	4	3	3
sink mark	0	0	0
jetting	0	0	0
cracks	1	0	3

*15D) shows case of mixing resins with each other and molding.. *21) shows case of first-recycling material in *15D). *22) shows case of second-recycling material in *15D).

Table 55

item / test (examination) item	molding material; HIPS resin paint; paint #20 (comparative example)	molding material; HIPS/formed PS resin paint ; paint #20		
	fresh molding by virgin material *2)	first recycle *6C)	second recycle *7C)	third recycle *8C)
1. Coatability				
1-1 appearance	O	O	O	O
1-2 paint film properties				
pencil hardness test	HB or over	HB or over	HB or over	HB or over
cross hatch test	100/100	100/100	100/100	100/100
crosscut test	1mm or less	1mm or less	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
salt water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.
*2) is the same as that in the 4th Example.
*6C), *7C) and *8C) show content wherein reproduced pellets of foamed PS resin are added after crushing and pelletizing virgin material in content of *3), *4) and *5) in 4th Example.

Table 60

Table shows blending rate of thinner.

(item)	rate(weight(kg))
thinner No	S5
raw stock (solvent)	
methanol	30
normal butanol	20
isopropyl alcohol	30
butylcellosolve	20
(total)	100

Table 86

paint / test item	paint #30
cross hatch test	100/100

Test method and others depend on table 8.

Table 87

paint / test item	paint #10
cross hatch test	100/100

Test method and others depend on table 8.

Table 88

paint / test item	paint #30
cross hatch test	100/100

Test method and others depend on table 8.

Table 62

item / failure phenomena	molding material; modified PPO(E) paint ; paint #20		
	first molding *15)	second molding *16)	third molding *17)
total molding number	360	306	180
scorch failure	0	2	1
failure by contamination or foreign matter	6	4	2
silver streak	0	3	3
short shot	0	6	4
sink mark	0	0	0
jetting	0	0	0
cracks	1	2	2

*15),*16) and *17) are the same as those described in 12th Example.

Table 64

item / failure phenomena	molding material; ABS resin paint ; paint #40		
	first molding *15)	second molding *16)	third molding *17)
total molding number	471	401	330
scorch failure	2	2	1
failure by contamination or foreign matter	5	1	2
silver streak	4	1	0
short shot	0	2	0
sink mark	0	0	0
jetting	0	0	0
cracks	3	0	1

*15),*16) and *17) are the same as those described in 12th Example.

Table 61

item / test (examination) item	molding material; modified PPO(E) resin paint; paint #40 (comparative example)	molding material: modified PPO(E) resin paint ; paint #40		
	fresh molding by virgin material *2)	first recycle *3)	second recycle *4)	third recycle *5)
1. Coatability				
1-1 appearance	○	○	○	○
1-2 paint film properties				
pencil hardness test	HB or over	HB or over	HB or over	HB or over
cross hatch test	100/100	100/100	100/100	100/100
crosscut test	1mm or less	1mm or less	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
salt water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.
*2), *3), *4) and *5) are the same as those described in 4th Example.

Table 63

test (examination) item \ item	mlding material; ABS resin paint; paint #40 (comparative example)	molding material; ABS resin paint ; paint #40		
	fresh molding by virgin material *2)	first recycle *3)	second recycle *4)	third recycle *5)
1. Coatability				
1-1 appearance	O	O	O	O
1-2 paint film properties				
pencil hardness test	HB or over	HB or over	HB or over	HB or over
cross hatch test	100/100	100/100	100/100	100/100
crosscut test	1mm or less	1mm or less	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
salt water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.
*2), *3), *4)and *5) are the same as those described in 4th Example.

Table 65

item / test (examination) item	molding material; HIPS resin paint; paint #40 (comparative example)	molding material; HIPS resin paint ; paint #40		
	fresh molding by virgin material *2)	first recycle *3)	second recycle *4)	third recycle *5)
1. Coatability				
1-1 appearance	O	O	O	O
1-2 paint film properties				
pencil hardness test	HB or over	HB or over	HB or over	HB or over
cross hatch test	100/100	100/100	100/100	100/100
crosscut test	1mm or less	1mm or less	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
salt water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.
*2), *3), *4) and *5) are the same as those described in 4th Example.

Table 66

item / failure phenomena	molding material; HIPS resin paint ; paint #40		
	first molding *15)	second molding *16)	third molding *17)
total molding number	411	391	323
scorch failure	3	3	1
failure by contamination or foreign matter	3	2	2
silver streak	3	1	1
short shot	0	2	0
sink mark	0	0	0
jetting	0	0	0
cracks	3	0	1

*15),*16) and *17) are the same as those described in 12th Example.

Table 67

○: good matching △: inferior matching ×: no matching

type	ABS	ASA	CA	EVA	PA6	PA6-6	PC	HDPE	LDPE	PMMA	POM	PP	modified PPO	GPPS	HIPS	PBT	TPU	PVC-W	SAN	TPR	PET	PVAC	PPS	Blend PC/PBT	Blend PC/ABS
ABS	○	○	○				○	×	×	○		×	×	×	×	○	○	○	○		○	△		○	○
ASA	○	○	○	○			○	×	×	○		×	×	×	×	○	○	○	○			△			
CA	○	○	○	△				×	×			×	×	×	×	○	○	○	○						
EVA		○	△	○				○	○			○		○				×							
PA6			○	○	○			△	△			△		×	×		○								
PA6-6					○	○	△	△	△			△		×	×		○								
PC	○	○				△	○	×	×			×		×	×	○	○	○	○		○		○	○	○
HDPE	×	×	×	○	△	△	×	○	○	△	△	×		×	×	×	×	△	×						×
LDPE	×	×	×	○	△	△	×	○	○	△	△	○	△	×	×	×	×	△	×	○					×
PMMA	○	○	○	△				△	△	○		△		×	×	×	×	△	×						
POM								△	△			△		×	×	×	×	△	×						
PP	×	×	×	○	△	△	×	×	○	△	△	○	△	×	×	×	×	△	×	○					×
modified PPO	×	×	×									△	○	○	○	×	×	×	×						
GPPS	×	×	×				×	×	×	×	×	×	×	○	○	×	×	×	×						
HIPS	×	×	×				×	×	×	×	×	×	×	○	○	×	×	×	×						
PBT	○	○	○				○	×	×			×	×	×	×	○	○	○	○						
TPU	○	○	○				○	×	×			×	×	×	×	○	○	○	○						
PVC-W	○	○	○	×			○	△	△			△	×	×	×	○	○	○	○						
SAN	○	○	○				○	×	×			×	×	×	×	○	○	○	○		○	△			
TPR												○								○					
PET	○						○												○		○			○	○
PVAC	△	△																				○			
PPS							○																○		
Blend PC/PBT	○	○					○	×	×			×	×	×	×									○	
Blend PC/ABS	○	○					○	×	×			×	×	×	×				○		○				○

(referred from document of Battenfeld Corp.)

Table 68

paint / test item	paint #10	paint #20
cross hatch test	38/100	29/100

Test method and others depend on table 8.

Table 69

paint / test item	paint #10	paint #20
cross hatch test	100/100	100/100

Test method and others depend on table 8.

Table 70

paint / test item	paint #10	paint #20
cross hatch test	100/100	100/100

Test method and others depend on table 8.

Table 71

evaluation item	evaluation result
1.paint film ability 1-1. Appearance	bloom, pinhole, blister are not confirmed
2.paint film properties pencil hardness test	HB or over
cross hatch test	100/100
cross cut test	1mm or below
hot water dip test	no abnormality 100/100
humidity test	no abnormality 100/100
salt water dip test	no abnormality 100/100

Test method and others depend on table 8.

Table 72

evaluation item	evaluation result
1.paint film ability 1-1. Appearance	bloom, pinhole, blister are not confirmed
2.paint film properties pencil hardness test	HB or over
cross hatch test	100/100
cross cut test	1mm or below
hot water dip test	no abnormality 100/100
humidity test	no abnormality 100/100
salt water dip test	no abnormality 100/100

Test method and others depend on table 8.

Table 74

evaluation item	evaluation result
1.moldability	moldability in molding process and molding failure phenomena have no difference t all to those in 5th Example using ABS resin and Paint #10

Table 73

evaluation item	evaluation result
1.paint film ability	
1-1. Appearance	bloom, pinhole, blister are not confirmed
2.paint film properties	
pencil hardness test	HB or over
cross hatch test	100/100
cross cut test	1mm or below
hot water dip test	no abnormality 100/100
humidity test	no abnormality 100/100
salt water dip test	no abnormality 100/100

Test method and others depend on table 8.

Table 75

evaluation item	evaluation result
1.paint film ability	
1-1. Appearance	bloom, pinhole, blister are not confirmed
2.paint film properties	
pencil hardness test	HB or over
cross hatch test	100/100
cross cut test	1mm or below
hot water dip test	no abnormality 100/100
humidity test	no abnormality 100/100
salt water dip test	no abnormality 100/100

Test method and others depend on table 8.

Table 77

evaluation item	evaluation result
1.paint film ability	
1-1. Appearance	bloom, pinhole, blister are not confirmed
2.paint film properties	
pencil hardness test	HB or over
cross hatch test	100/100
cross cut test	1mm or below
hot water dip test	no abnormality 100/100
humidity test	no abnormality 100/100
salt water dip test	no abnormality 100/100

Test method and others depend on table 8.

Table 76

evaluation item	evaluation result	
1.moldability	no difference in moldability is found by addition of refused toner	
2.failure occurrences	added refused toner	no added refused toner
total molding number	106	118
scorch failure	0	0
silver streak	2	3
failure in gloss	0	0
color irregularity	0	0
short shot	1	1
sink mark	0	0
cracks failure	1	2

Table78

moldings / positions of measuring density	case of mounting a rear cover obtained by a molding process	case of mounting a rear cover colored in black by used of a refused toner and coated with recyclable paint #10
①	0.89	0.88
②	0.78	0.78
③	0.79	0.84
④	0.71	0.74
⑤	0.89	0.88
⑥	0.77	0.85
⑦	0.87	0.96
⑧	0.82	0.89
⑨	0.91	0.90
⑩	0.76	0.92
⑪	0.80	0.82
⑫	0.82	0.81
⑬	0.68	0.93
⑭	0.74	0.99

Table 79

evaluation item	evaluation result
1.moldability	Swirl mark or silver streak was not found at time of molding. No difference in moldability is caused comparing with virgin ABS resin without addition of refused toner
2.paint film ability 2-1. Appearance	bloom, pinhole, blister are not confirmed
3.paint film properties pencil hardness test	HB or over
cross hatch test	100/100
cross cut test	1mm or below
hot water dip test	no abnormality 100/100
humidity test	no abnormality 100/100
salt water dip test	no abnormality 100/100

Test method and others depend on table 8.

Table 82

evaluation item	evaluation result
1.paint film ability 1-1. Appearance	bloom, pinhole, blister are not confirmed
2.paint film properties pencil hardness test	HB or over
cross hatch test	100/100
cross cut test	1mm or below
hot water dip test	no abnormality 100/100
humidity test	no abnormality 100/100
salt water dip test	no abnormality 100/100

Test method and others depend on table 8.

Table 84

evaluation item	evaluation result
1.paint film ability 1-1. Appearance	bloom, pinhole, blister are not confirmed
2.paint film properties pencil hardness test	HB or over
cross hatch test	100/100
cross cut test	1mm or below
hot water dip test	no abnormality 100/100
humidity test	no abnormality 100/100
salt water dip test	no abnormality 100/100

Test method and others depend on table 8.

Table 83

evaluation item	evaluation result	
1.moldability	difference in moldability and failure occurrences are not found in using ABS resin whether or not painted with paint #50.	
2.failure occurrences	painted with paint #50	no painted with paint #50
total molding number	166	139
non-defective articles	166	138
scorch failure	0	0
failure in contamination & foreign matter	0	0
silver streak	0	0
failure in gloss	0	0
color irregularity	0	0
clouding	0	0
short shot	0	1
sink mark	0	0
cracks failure	0	0

Table 85

evaluation item	evaluation result	
1.moldability	difference in moldability and failure occurrences are not found in using ABS resin whether or not painted with paint #50.	
2.failure occurrences	painted with paint #50	no painted with paint #50
total molding number	111	128
non-defective articles	111	128
scorch failure	0	0
failure in contamination & foreign matter	0	0
silver streak	0	0
failure in gloss	0	0
color irregularity	0	0
clouding	0	0
short shot	0	0
sink mark	0	0
cracks failure	0	0

Table 89

item / test (examination) item	molding material; ABS resin paint ; paint #10			
	fresh molding by virgin material*2)	first recycle *3)	second recycle *4)	third recycle *5)
1. Coatability				
1-1 appearance	O	O	O	O
1-2 paint film properties				
pencil hardness test	HB or over	HB or over	HB or over	HB or over
cross hatch test	100/100	100/100	100/100	100/100
crosscut test	1mm or less	1mm or less	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.
*2), *3), *4)and *5) are the same as those described in 4th Example.

Table 90

item / test (examination) item	molding material; ABS resin paint ; paint #30			
	fresh molding by virgin material*2)	first recycle *3)	second recycle *4)	third recycle *5)
1. Coatability				
1-1 appearance	O	O	O	O
1-2 paint film properties				
pencil hardness test	HB or over	HB or over	HB or over	HB or over
cross hatch test	100/100	100/100	100/100	100/100
crosscut test	1mm or less	1mm or less	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.
*2), *3), *4)and *5) are the same as those described in 4th Example.

Table 91

item / test (examination) item	molding material; HIPS resin paint : paint #10			
	fresh molding by virgin material*2)	first recycle *3)	second recycle *4)	third recycle *5)
1. Coatability				
1-1 appearance	O	O	O	O
1-2 paint film properties				
pencil hardness test	HB or over	HB or over	HB or over	HB or over
cross hatch test	100/100	100/100	100/100	100/100
crosscut test	1mm or less	1mm or less	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.
*2), *3), *4) and *5) are the same as those described in 4th Example.

Table 92

item / test (examination) item	molding material; HIPS resin paint : paint #20			
	fresh molding by virgin material *2)	first recycle *3)	second recycle *4)	third recycle *5)
1. Coatability				
1-1 appearance	O	O	O	O
1-2 paint film properties				
pencil hardness test	HB or over	HB or over	HB or over	HB or over
cross hatch test	100/100	100/100	100/100	100/100
crosscut test	1mm or less	1mm or less	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.
*2), *3), *4) and *5) are the same as those described in 4th Example.

Table 93

item / test (examination) item	molding material; ABS resin paint : paint #30			
	fresh molding by virgin material *2)	first recycle *3)	second recycle *4)	third recycle *5)
1. Coatability				
1-1 appearance	○	○	○	○
1-2 paint film properties				
pencil hardness test	HB or over	HB or over	HB or over	HB or over
cross hatch test	100/100	100/100	100/100	100/100
crosscut test	1mm or less	1mm or less	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.
*2), *3), *4)and *5) are the same as those described in 4th Example.

Table 94

item / test (examination) item	molding material; ABS resin paint : paint #10			
	fresh molding by virgin material *2)	first recycle *3)	second recycle *4)	third recycle *5)
1. Coatability				
1-1 appearance	○	○	○	○
1-2 paint film properties				
pencil hardness test	HB or over	HB or over	HB or over	HB or over
cross hatch test	100/100	100/100	100/100	100/100
crosscut test	1mm or less	1mm or less	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.
*2), *3), *4)and *5) are the same as those described in 4th Example.

Table 95

item / test (examination) item	molding material; HIPS resin paint : paint #10			
	fresh molding by virgin material *2)	first recycle *3)	second recycle *4)	third recycle *5)
1. Coatability				
1-1 appearance	O	O	O	O
1-2 paint film properties				
pencil hardness test	HB or over	HB or over	HB or over	HB or over
cross hatch test	100/100	100/100	100/100	100/100
crosscut test	1mm or less	1mm or less	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.
*2), *3), *4) and *5) are the same as those described in 4th Example.

Table 96

item / test (examination) item	molding material; HIPS resin paint : paint #20			
	fresh molding by virgin material *2)	first recycle *3)	second recycle *4)	third recycle *5)
1. Coatability				
1-1 appearance	O	O	O	O
1-2 paint film properties				
pencil hardness test	HB or over	HB or over	HB or over	HB or over
cross hatch test	100/100	100/100	100/100	100/100
crosscut test	1mm or less	1mm or less	1mm or less	1mm or less
hot water dip test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100
humidity test	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100	no abnormality 100/100

Test method and others depend upon table 8.
*2), *3), *4) and *5) are the same as those described in 4th Example.

Table97

item evaluation item failure phenomena	painted and printed molding material: ABS paint ; paint #10 ink ; ink #15	neither painted nor printed
1.moldability	no problem on molding operations is caused by incorporation of paint film and print film.	-
2.failure occurrences total molding number	69	66
scorch failure	0	0
failure in contamination or foreign matter	0	0
silver streak	0	0
short shot	2	0
sink mark	0	0
jetting	0	0
cracks failure	0	0

Table 98-1

molding resin	TYPE OF RESIN	NAME OF MANUFACTURING MAKER	COMMERCIAL NAME AND GRADE
No. of paint resin			
101	styrenated alkyd resin	Dainippon Ink And Chemicals,Inc.	Stysol 4250
102	thermoplastic acrylic resin	Dainippon Ink And Chemicals,Inc.	Acrydic A-166
103	chlorinated polypropylene resin	Dainippon Ink And Chemicals,Inc.	Acrydic CL-1000
104	vinyl acetate modified acrylic resin	Dainippon Ink And Chemicals,Inc.	Acrydic CL-1712
105	phenolic resin	Dainippon Ink And Chemicals,Inc.	Beckacite 1126HV
106	rosin modified meleic acid resin	Dainippon Ink And Chemicals,Inc.	Beckacite 1110
107	phenolic resin	Dainippon Ink And Chemicals,Inc.	Phenolite 5010
108	polyamide resin	Dainippon Ink And Chemicals,Inc.	Luckamide 500
111	chlorinated polyethylene resin	Nippon Paper Industries Co.,Ltd.	Superchlon HE-905
113	chlorinated polypropylene resin	Nippon Paper Industries Co.,Ltd.	Superchlon 224H
116	vinyl choloride resin	BASF AG	Laroflex MP45
121	styrene modified acrylic resin	Mitsubishi Rayon Co.,Ltd.	Dianal BR-52
127	styrene acrylic resin emulsion	Tohpe Corporation	XA-4408
128	acrylic emulsion	Tohpe Corporation	XA-2409
129	polyamide resin	Henkel Hakusui Corporation	Versamid 725
130	urethane emulsion	Tohpe Corporation	GL-Top-U
132	chlorinated polypropylene resin	Mitsubishi Rayon Co.,Ltd.	Dianal JR1487
133	chlorinated polypropylene resin	Mitsubishi Rayon Co.,Ltd.	Dianal JR1409
10	styrene modified acrylic resin	Dainippon Ink And Chemicals,Inc.	Acrydic A-157
149	styrene modified acrylic resin	Dainippon Ink And Chemicals,Inc.	Acrydic 56-1155
molding resin			
20	PS resin	Asahi Chemical Ind.,Ltd.	Styron 685
30	AS resin	Denki kagaku kogyo k.k.	AS-EXB
40	alcoholsouluble nylon resin	Toray Industries, Inc.	Amilan MC8000
PE	PE resin	Japan Polyolefine Co.,Ltd.	J-Rex HDPF F6200V
PP	PP resin	Japan Polyolefine Co.,Ltd.	J-Allomer MK541
PA	PA resin	Asahi Chemical Ind.,Ltd.	Leona 1300S
PET	PET resin	NOF Corporation	ModiperA1100
compatibilizing or miscibilizing agent			
A1100	LDPE/PSt=7/3	NOF Corporation	ModiperA1100
A1400	LDPE/P(St-r-AN)=7/3	NOF Corporation	ModiperA1400
CT121	PC/AS=50/50	NOF Corporation	ModiperCT121
CT134	PC/AS=70/30	NOF Corporation	ModiperCT134
CT120	PC/AS=70/30	NOF Corporation	ModiperCT120
CT430	PC/AS=70/30	NOF Corporation	ModiperCT430

Table 98-2
Evaluation result of affinity of paint resin and thermoplastic molding resin

molding r sin / paint resin	molding resin (resin which is a constitu nt of m lding)						
	HIPS resin	ABS r sin	PC resin	rigid vinyl chloride resin(S)	nylon resin	PP resin	PE resin
(No. of paint resin)							
101	100	100	100	100			
102	100	100	100	100			
103						100	
104	100						
105	100						
106	100						
107	100						
108					100		
111							100
113						100	
116				100			
121	100	100	100	100		100	
127	100	100	100			100	
128	100	100				100	100
129					100		
130	100	100	100	100			
132						100	
133						100	
10	100	100	100				
149	100	100	100				
(molding resin)							
20	100	90				20	50
30	50		100		40	30	
40		100			100		
PE	50	50				100	100
PP	20	30				100	100
PA		50			100		
PET		100					
(compatibilizing or miscibilizing agent)							
A1100		100					
A1400		20					
CT121		90					
CT134		90					
CT120		100					
CT430		80					

note)
*HIPS resin;-high-impact polystyrene resin by Asahi Chemical Industry Co.,Ltd.
commercial name and grade; Stylac 495
*ABS resin; ABS resin by Asahi Chemical Industry Co., Ltd.
commercial name and grade; Stylac 120
*PC resin; polycarbonate resin by Tejin Chemicals Ltd.
commercial name and grade; Panlite L-1225Y
*rigid vinyl chloride resin; hard vinyl choloride resin by Riken Vinyl Industry Co., Ltd.
(for injection molding), commercial name and grade; VBV0006F
*nylon resin; nylon 6 resin by Unitika Ltd., commercial name and grade; A1030JR
*PP resin; polypropylene resin (homopolymer) by Chisso Petrochemical Co., Ltd.
commercial name and grade; Chisso Polypro K-1008
*PE resin; polyethylene resin by Japan Polyolefine Co., Ltd.
commercial name and grade; Jayrex HDPE F6200V
note on numerical sign)
100, 50 and others show results of cross hatch test based on JIS standard K5400 8.4.2
(a denominator of 100 is omitt d)

Table 99-1

Table shows thermoplastic resins su[illegible]ed on cross hatch test to evaluate affiniti[illegible]
thermoplastic resins constituting pa[illegible]nd thermoplastic resins mainly constituting [illegible]dings

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NO.OF PAINT RESIN	TYPE OF RESIN	NAME OF MANUFACTURING MAKER	COMMERCIAL NAME AND GRADE
101	styrenated alkyd resin	Dainipp n Ink And Chemicals,Inc.	Stysol 4250
102	th rmoplastic acrylic resin	Dainippon Ink And Chemicals,Inc.	Acrydic A-166
103	chlorinated polypr pylene resin	Dainippon Ink And Chemicals,Inc.	Acrydic CL-1000
104	vinyl acetate modified acrylic resin	Dainippon Ink And Chemicals,Inc.	Acrydic CL-1712
105	phenolic resin	Dainippon Ink And Chemicals,Inc.	Beckacite 1126HV
106	rosin modified maleic resin	Dainippon Ink And Chemicals,Inc.	Beckacite 1110
107	phenolic resin	Dainippon Ink And Chemicals,Inc.	Phenolite 5010
110	chlorinated polypropylene resin	Nippon Paper Industries Co.,Ltd.	Superchlon HP-205
111	chlorinated polyethylene resin	Nippon Paper Industries Co.,Ltd.	Superchlon HE-905
112	chlorinated polypropylene resin	Nippon Paper Industries Co.,Ltd.	Superchlon 832L
113	chlorinated polypropylene resin	Nippon Paper Industries Co.,Ltd.	Superchlon 224H
114	rosin ester	Arakawa Chemical Industries,Ltd.	Ester Gum AAL
115	rosin modified phenol	Arakawa Chemical Industries,Ltd.	Tamanol 135
116	vinyl chloride resin	BASF AG	Laroflex MP45
117	polyvinyl butyral	Sekisui Chemical Co.,Ltd.	S-Lec BMS
118	polyvinyl alcohol	Sekisui Chemical Co.,Ltd.	S-Lec A
119	vinyl chloride/vinyl acetate copolymerized resin	Sekisui Chemical Co.,Ltd.	S-Lec C
121	styrene modified acrylic resin	Mitsubishi Rayon Co.,Ltd.	Dianal BR-52
122	thermoplastic acrylic resin	Mitsubishi Rayon Co.,Ltd.	Dianal BR-64
123	thermoplastic acrylic resin	Mitsubishi Rayon Co.,Ltd.	Dianal BR-83
124	thermoplastic acrylic resin	Mitsubishi Rayon Co.,Ltd.	Dianal BR-93
125	thermoplastic acrylic resin	Mitsubishi Rayon Co.,Ltd	Dianal BR-105
126	thermoplastic acrylic resin	Mitsubishi Rayon Co.,Ltd.	Dianal BR-107
127	styrene acrylic resin emulsion	Tohpe Corporation	XA-4408
128	acrylic emulsion	Tohpe Corporation	XA-2409
129	polyamide resin	Henkel Hakusui Corporation	Versamid 725
130	urethane emulsion	Tohpe Corporation	GL-Top-U
131	epoxy resin	Arakawa Chemical Industries,Ltd.	Arakyd 920IN
132	chlorinated polypropylene resin	Mitsubishi Rayon Co.,Ltd.	Dianal JR1487
133	chlorinated polypropylene resin	Mitsubishi Rayon Co.,Ltd.	Dianal JR1409
136	aklyd resin/nitrocellulose	Dainippon Ink And Chemicals,Inc.	BS1323-60EL
137	thermoplastic acrylic resin/nitrocellulose	Taiseikakou Kabushikikaisha	Acryt 7541MA
138	vinyl chloride resin	Kaneka Corporation	Kanevilack L-ED
139	vinyl acetate modified acrylic resin	The Nippon Synthetic Chemical Industry Co.,Ltd	Coponyl 9503L
140	styrene modified acrylic resin	Japan U.Pica Company,Ltd.	Upicacoat AC3320
141	alkyd resin	Dainippon Ink And Chemicals,Inc.	Acrydic A-1053
142	urethane modified alkyd resin	Arakawa Chemical Industries,Ltd.	Arakyd 7502X
143	thermoplastic acrylic resin	Japan U.Pica Company,Ltd.	Upicacoat AC3260
144	polyvinyl butyral	Sekisui Chemical Co.,Ltd.	S-Lec BL-1-25BX
145	chlorinated polyethyl ne resin	Mitsui P trochemical Indystries Ltd.	Unistol
146	chlorinated p lyethylene resin	Nippon Paint Co .,Ltd.	Nippe PP Primer
10	styrene modified acrylic resin	Dainippon Ink And Chemicals,Inc.	Acrydic A-157
149	styrene modifi d acrylic resin	Dainippon Ink And Chemicals,Inc.	Acrydic 56-1155
151	watersoluble acrylic resin	Dainippon Ink And Chemicals,Inc.	Watersol CD540

Table 99-2 evaluation result of affinity of paint thermoplastic resin and molding thermoplastic resin through cross hatch test

resin No. for paint	HIPS resin	styl n modified PPO(E) resin	ABS resin	flame-r tardant ABS resin	PC resin	rigid vinyl chloride resin(S)	plasticized polyvinyl chloride resin(T)	nylon resin	PP resin(P)	PP resin(S)
101	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	○ 90	× 0	○ 90	× 0	× 0
102	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	× 0	× 0	× 0	× 0
103	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	× 0	◎ 100	× 0	× 0
104	× 0	× 0	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	× 0	× 0	× 0
105	× 0	× 0	× 0	× 0	× 0	× 0	× 0	× 0	× 0	× 0
106	× 10	× 0	× 10	× 0	× 10	× 0	× 0	× 10	× 0	× 0
107	× 0	× 0	× 0	× 0	× 0	× 0	× 0	○ 90	× 0	× 0
110	△ 20	△ 20	△ 30	◎ 100	× 0	× 0	× 0	× 0	× 0	× 0
111	× 0	× 0	× 0	× 0	× 0	× 0	× 0	× 0	× 0	× 0
112	◎ 100	◎ 100	◎ 100	△ 80	◎ 100	◎ 100	× 0	◎ 100	◎ 100	◎ 100
113	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	○ 90	◎ 100	○ 80	× 0	× 0
114	△ 70	× 0	× 0	× 0	× 0	× 0	× 0	× 0	× 0	× 0
115	△ 70	× 0	× 0	× 0	× 0	× 0	× 0	× 0	× 0	× 0
116	× 0	× 0	◎ 100	◎ 100	◎ 100	◎ 100	× 0	× 0	× 0	× 0
117	× 0	× 0	× 0	× 0	× 0	× 0	× 0	× 0	× 0	× 0
118	× 0	× 0	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	× 0	× 0	× 0
119	◎ 100	× 0	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	× 0	× 0	× 0
121	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	○ 90	◎ 100	× 0	× 0	× 0
122	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	× 0	× 0	× 0
123	◎ 100	○ 90	◎ 100	◎ 100	× 10	○ 90	◎ 100	× 0	× 0	× 0
124	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	× 0	× 0	× 0	× 0
125	○ 90	× 0	× 10	× 20	× 10	× 10	× 0	× 0	× 0	× 0
126	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	× 0	× 0	× 0	× 0
127	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	× 0	× 0	× 0	× 0	× 0
128	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	× 0	× 0	× 0	× 0	× 0
129	× 0	○ 90	△ 30	◎ 100	○ 90	× 0	× 0	◎ 100	× 0	× 0
130	× 0	× 0	× 0	× 0	× 0	× 0	× 0	× 0	× 0	× 0
131	× 0	× 0	× 0	× 0	◎ 100	× 0	× 0	× 0	× 0	× 0
132	○ 90	○ 90	× 0	○ 90	○ 90	○ 90	× 0	× 0	× 0	× 0
133	○ 90	○ 90	○ 90	○ 90	△ 50	○ 90	× 0	○ 90	○ 90	○ 90
136	× 0	× 0	◎ 100	◎ 100	◎ 100	× 0	× 0	○ 80	× 0	× 0
137	× 0	× 0	◎ 100	◎ 100	× 0	× 0	× 0	○ 90	× 0	× 0
138	× 0	× 0	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	× 0	× 0
139	△ 30	△ 70	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	× 0	× 0	× 0
140	◎ 100	◎ 100	△ 70	◎ 100	◎ 100	◎ 100	× 0	× 0	× 0	× 0
141	× 0	× 0	◎ 100	◎ 100	△ 60	△ 60	× 0	◎ 100	× 0	× 0
142	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	○ 90	◎ 100	× 0	× 0
143	△ 80	△ 70	× 0	△ 30	× 0	△ 80	× 0	△ 30	× 0	× 0
144	△ 80	◎ 100	△ 80	◎ 100	◎ 100	△ 80	× 0	× 0	× 0	× 0
145	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	× 0	◎ 100	◎ 100	◎ 100
146	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	× 0	◎ 100	◎ 100	◎ 100
10	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	× 0	× 0	× 0
149	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	× 0	× 0	× 0
151	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	◎ 100	× 0	× 0	× 0

Table 99-3

Not)

- HIPS resin; high impact polystyrene resin made by Asahi Chemical Ind. Co.,Ltd
  commercial name and grade ; Styrac 495
- styrene modified PPO(E) resin ; styrene modified PPO(E) resin made by Asahi Chemical Ind. Co Ltd
  commercial name and grade ; Xyron 100Z
- ABS resin ; ABS resin made by Asahi Chemical Ind. Co Ltd
  commercial name and grade ; Styrac 120
- flame-retardant ABS resin ; flame-retardant ABS resin made by Ube Cycon. Ltd.
  commercial name and grade ; CYCOLAC ZFJ12
- PC resin ; polycarbonate resin made by Teijin Chemical Co., Ltd.,
  commercial name and grade ; PANLITE L-1225Y
- rigid vinyle chloride resin(S) ; rigid vinyle chloride resin for injection molding made by Riken Vinyle Co., Ltd.,
  commercial name and grade ;VBV0006F
- plasticized polyvinyl chloride resin(T) ; plasticized polyviyl chloride resin for injection molding made by Riken Vinyle Co., Ltd.,
  commercial name and grade ; TG-8928S
- nylon resin ;nylon resin made by Unitika Ltd.,
  commercial name and grade ;A1030JR
- PP resin(P) ; polypropylene resin (homo polymer) made by CHISSO Petrochemical Co., Ltd.,
  commercial name and grade ; CHISSO POLYPRO K-1008
- PP resin(S) ; polypropylene resin (blockcopolymer, high crystal polypropylene resin) made by Chisso Petrochemical Co., Ltd.,
  commercial name and grade ; CHISSO POLYPRO K-5230

Notes of Sign)

100,90 show results in adhesion property test of paint film accordance with JIS standard K 5400 8. 4. 2 (denominator of 100 is omitted)

◎; adhesion property is 100/100

○; adhesion property is 90/100 or over

△; adhesion property is 20/100 or over and 90/100 or below

×; adhesion property is 20/100 or over

Table 100-1

Test item, test method, requird value and unit of Coating film

test item	test method	required value(reference)	unit	sign
1. coatability(appearance),luster,surface irregularity,wrinkle and so on	accordance with JIS K 5400 7. 1	nothing		B-1
2. Paint film property (1) dry thickness of paint film		10 μm or over	μm	B-2
(2) pencil hardness test	accordance with JIS K 5400 8.4.2			B-3
(3) relative specular glossiness at 60 degree	accordavce with JIS K 5400 6.7			B-4
(4) cross hatch test at 90 degree	accordance with JIS K 5400 8.5.2	adhesion 100/100		B-5
(7) hot water dip test	accordance with JIS K 5400 8.19 (40℃,48hr.dipping)	no abnormality in gloss,discoloration, bulging and so on		B-6
	cross hatch test after hot water dip test	adhesion 100/100		B-7
	cross cut test after hot water dip test	peeling width 1mm or below	mm	B-8
(8) humidity test	accordance with JIS K 5400 9.2.2 (98%RH 50℃,72hr)	no abnormality in gloss,discoloration, bulging and so on		B-9
	cross hatch test after humidity test	adhesion 100/100		B-10
	cross cut test after humidity test	peeling width 1mm or below	mm	B-11
(9) salt water dip test	accordance with JIS K 5400 9.23 (3%NaCl water solution 40℃,72hr. Dipping)	no abnormality in gloss,discoloration, bulging and so on		B-12
	cross hatch test after salt water test	adhesion 100/100		B-13
	cross cut test after salt water test	peeling width 1mm or below	mm	B-14
(10) impact resistance test	1/2inch Φ×300g×50cm	nothing of crack,peeling and so on		B-15
(11) abrasion resistance test	CS10/500g/1000rpm	150mgf or below	mg	B-16
(12) weather resistance test	JIS K 5400 9.7.2 100hr.	ΔE=3 or below		B-17
3. fundamental properties of material (1) density	JIS K 6911 5.2		g/ml	C-1
4. Thermal properties of material (1) heat deformation temperature (*27)	ATEM-D648		℃	C-2
(2) vicat softening point temperature	ATEM-D1525		℃	C-3
(3-1) melt flow rate	JIS K 7210		g/10min	C-4
(3-3) melt flow rate	ISO-R1133		g/10min	C-5
(3-3) melt flow rate (memo)mesurements of melt flow rate vary in response to varieties of resin	250℃ 10kg		g/10min	C-6
5. Mechanical properties of material (1) tensile break strength	ATEM-D638		kg/cm²	C-7
(2) elongation at break	ATEM-D638		%	C-8
(3) bending strength	ATEM-D790		kg/cm²	C-9
(4) modulus in flexure	ATEM-D790		kg/cm²	C-10
(5) Izod impact strength (*28)	ATEM-D256		kg-cm/cm	C-11
(6) Rockwell hardness (*29) (memo)mesurements of Rockwell hardness vary in response to varieties of resin	R scale L scale			C-12 C-13
7. The others (1) water absorption (*30)	JIS K 7209		%	C-14

(memo) *27) load-deflection temperature18. .6kg load

*28) notched

*29) Rockwell hardness :1/4"strip(without surfice finish)
transversed measuring section at gate side,R scale or L scale

*30) measurement of variation in weight of dumb-bell specimen after leaving it 24 hours under water of 23 ℃

Table 100-2

molding material: ABS resin (ABS resin by Asahi Chemical Industry Co., Ltd.; Commercial name and grade; Stylac 191)

coating ; paint #149

test item	times of recycle			
	0 turn (V material) *2)	1 turn *3)	2 turn *4)	3 turn *5)
B-1		○ no abnormality	○ no abnormality	○ no abnormality
B-2		17 μm	17 μm	17 μm
B-3		HB	HB	HB
B-4	75.6	6.3	5.9	6.6
B-5		100/100	100/100	100/100
B-6		no abnormality	no abnormality	no abnormality
B-7		100/100	100/100	100/100
B-8		1mm or below	1mm or below	1mm or below
B-9		no abnormality	no abnormality	no abnormality
B-10		100/100	100/100	100/100
B-11		1mm or below	1mm or below	1mm or below
B-12		no abnormality	no abnormality	no abnormality
B-13		100/100	100/100	100/100
B-14		1mm or below	1mm or below	1mm or below
B-15		no abnormality	no abnormality	no abnormality
B-16		success	success	success
B-17	ΔE=0.86	ΔE=0.21	ΔE=0.29	ΔE=0.24
C-1	1.067	1.071	1.074	1.072
C-2	82.9	83.6	82.6	86.3
C-3	106.4	106.2	106.6	107.3
C-4	24.9	26.3	27.3	27.3
C-7	433	430	432	431
C-8	16	17	18	17
C-9	714	720	733	734
C-10	26400	26400	26700	25700
C-11	14.9	12.8	12.6	10.9
C-12	113	113	113	113
C-14	0.19	0.22	0.19	0.17

note)

(molding conditions; molding temperature and moldi machine are those of Nikko J100EP)

Physical properties; 240°C—240°C—220°C—200°C

Table 101

molding material: ABS resin (ABS resin by Asahi Chemical Industry Co., Ltd.; Commercial name and grade; Stylac 191)

coating ; paint #151

	times of recycle			
test item	0 turn (V material) *2)	1 turn *3)	2 turn *4)	3 turn *5)
B-1		○ no abnormality	○ no abnormality	○ no abnormality
B-2		17 μm	17 μm	17 μm
B-3		HB	HB	HB
B-4	77.8	5	4.8	5.2
B-5		100/100	100/100	100/100
B-6		no abnormality	no abnormality	no abnormality
B-7		100/100	100/100	100/100
B-8		1mm or below	1mm or below	1mm or below
B-9		no abnormality	no abnormality	no abnormality
B-10		100/100	100/100	100/100
B-11		1mm or below	1mm or below	1mm or below
B-12		no abnormality	no abnormality	no abnormality
B-13		100/100	100/100	100/100
B-14		1mm or below	1mm or below	1mm or below
B-15		no abnormality	no abnormality	no abnormality
B-16		success	success	success
B-17	ΔE=0.88	ΔE=0.98	ΔE=1.02	ΔE=1.01
C-1	1.067	1.071	1.074	1.075
C-2	82.9	83	83.9	85.2
C-3	106.4	106.1	106.7	106.8
C-4	24.9	25.8	26.7	26.1
C-7	433	434	435	437
C-8	16	18	18	18
C-9	714	721	735	737
C-10	26400	26600	26900	26200
C-11	14.9	13.6	12.9	10.3
C-12	113	112	112	114
C-14	0.19	0.19	0.21	0.15

note)

(molding conditions; molding temperature and moldi machine are those of Nikko J100EP)

Physical properties; 240℃—240℃—220℃—200℃

Table 102

molding material: ABS resin (ABS resin by Asahi Chemical Industry Co., Ltd.; Commercial name and grade; Stylac 191)

coating ; paint #149

test item	times of recycle			
	0 turn (V material) *2)	1 turn *3)	2 turn *4)	3 turn *5)
B-1		○ no abnormality	○ no abnormality	○ no abnormality
B-2		17 μm	17 μm	17 μm
B-3		HB	HB	HB
B-4	81.2	27.5	27	28.8
B-5		100/100	100/100	100/100
B-6		no abnormality	no abnormality	no abnormality
B-7		100/100	100/100	100/100
B-8		1mm or below	1mm or below	1mm or below
B-9		no abnormality	no abnormality	no abnormality
B-10		100/100	100/100	100/100
B-11		1mm or below	1mm or below	1mm or below
B-12		no abnormality	no abnormality	no abnormality
B-13		100/100	100/100	100/100
B-14		1mm or below	1mm or below	1mm or below
B-15		no abnormality	no abnormality	no abnormality
B-16		success	success	success
B-17	ΔE=0.81	ΔE=0.91	ΔE=0.88	ΔE=0.93
C-1	1.067	1.069	1.07	1.07
C-2	82.9	85.9	87.1	85.8
C-3	106.4	105.6	106	106.6
C-4	24.9	27.3	27.8	27.3
C-7	433	433	435	443
C-8	16	16	17	17
C-9	714	731	735	740
C-10	26400	26300	26800	25200
C-11	14.9	11.9	11.3	10.6
C-12	113	114	114	114
C-14	0.19	0.22	0.19	0.14

note)

(molding conditions; molding temperature and moldii machine are those of Nikko J100EP)

Physical properties; 240°C—240°C—220°C—200°C

Table 103

molding material: ABS resin (ABS resin by Asahi Chemical Industry Co., Ltd.; Commercial name and grade; Stylac 191)

no coating

	times of recycle			
test item	0 turn (V material) *2)	1 turn *3)	2 turn *4)	3 turn *5)
C-1	1.067	1.068	1.069	1.069
C-2	82.9	84.4	84.4	86.6
C-3	106.4	106.7	106.6	106.9
C-4	24.9	26.3	27	25.8
C-7	433	432	431	427
C-8	16	19	18	19
C-9	714	710	725	730
C-10	26400	26400	26500	25200
C-11	14.9	13.9	13.1	11.4
C-12	113	114	112	114
C-14	0.19	0.17	0.19	0.14

note)

(molding conditions; molding temperature and moldi machine are those of Nikko J100EP)
Physical properties; 240℃—240℃—220℃—200℃

Table 108

molding material: HIPS resin (HIPS resin by Asahi Chemical Industry Co., Ltd.; Commercial name and grade; Styron 492

no coating

	times of recycle			
test item	0 turn (V material) *2)	1 turn *3)	2 turn *4)	3 turn *5)
C-1	1.06	1.059	1.059	1.059
C-2	83.7	83.9	82.9	83.4
C-3	104.4	104.6	104.4	104.7
C-4	3.2	3.3	3.4	3.3
C-7	302	309	326	328
C-8	46	43	41	37
C-9	538	553	569	563
C-10	24900	25100	24200	22600
C-11	6.5	5.7	5.1	4.5
C-12	80	81	82	82
C-14	0.05	0.03	0.04	0.02

note)

(molding conditions; molding temperature and moldi machine are those of Nikko J100EP)
Physical properties; 220℃—220℃—200℃—180℃

Table 104

molding material: ABS resin (ABS resin by Asahi Chemical Industry Co., Ltd.; Commercial name and grade; Stylac 191)

coating ; (10:1) urethane paint

test item	times of recycle			
	0 turn (V material) *2)	1 turn *3)	2 turn *4)	3 turn *5)
B-1		○ no abnormality	○ no abnormality	○ no abnormality
B-2		17 μm	17 μm	17 μm
B-3		HB	HB	HB
B-4	77.1	38.2	39.6	38
B-5		100/100	100/100	100/100
B-6		no abnormality	no abnormality	no abnormality
B-7		100/100	100/100	100/100
B-8		1mm or below	1mm or below	1mm or below
B-9		no abnormality	no abnormality	no abnormality
B-10		100/100	100/100	100/100
B-11		1mm or below	1mm or below	1mm or below
B-12		no abnormality	no abnormality	no abnormality
B-13		100/100	100/100	100/100
B-14		1mm or below	1mm or below	1mm or below
B-15		no abnormality	no abnormality	no abnormality
B-16		success	success	success
B-17	ΔE=0.87	ΔE=1.22	ΔE=1.21	ΔE=1.08
C-1	1.067	1.069	1.069	1.069
C-2	82.9	87.3	87.1	85.3
C-3	106.4	105.7	105.5	105.8
C-4	24.9	26.4	27.7	27.2
C-7	433	431	431	447
C-8	16	12	13	13
C-9	714	732	726	735
C-10	26400	26900	26700	24500
C-11	14.9	11.3	9.7	7.8
C-12	113	114	114	113
C-14	0.19	0.2	0.21	0.14

note)

(molding conditions; molding temperature and moldi machine are those of Nikko J100EP)

Physical properties; 240℃—240℃—220℃—200℃

Table 105

molding material: ABS resin (ABS resin by Asahi Chemical Industry Co., Ltd.; Commercial name and grade; Stylac 191)

coating ; (4:1) urethane paint

	times of recycle			
test item	0 turn (V material) *2)	1 turn *3)	2 turn *4)	3 turn *5)
B-1		○ no abnormality	○ no abnormality	○ no abnormality
B-2		17 μm	17 μm	17 μm
B-3		HB	HB	HB
B-4	78.2	20.3	21.2	20.3
B-5		100/100	100/100	100/100
B-6		no abnormality	no abnormality	no abnormality
B-7		100/100	100/100	100/100
B-8		1mm or below	1mm or below	1mm or below
B-9		no abnormality	no abnormality	no abnormality
B-10		100/100	100/100	100/100
B-11		1mm or below	1mm or below	1mm or below
B-12		no abnormality	no abnormality	no abnormality
B-13		100/100	100/100	100/100
B-14		1mm or below	1mm or below	1mm or below
B-15		no abnormality	no abnormality	no abnormality
B-16		success	success	success
B-17	ΔE=0.91	ΔE=1.43	ΔE=1.38	ΔE=1.42
C-1	1.067	1.07	1.072	1.071
C-2	82.9	86.8	87.3	83.7
C-3	106.4	105.2	105.1	106.5
C-4	24.9	25.5	27.3	25.5
C-7	433	436	433	453
C-8	16	12	12	13
C-9	714	732	740	747
C-10	26400	26600	26900	24800
C-11	14.9	10.3	9.4	7.8
C-12	113	114	114	115
C-14	0.19	0.22	0.16	

note)

(molding conditions; molding temperature and moldi machine are those of Nikko J100EP)

Physical properties; 240℃ — 240℃ — 220℃ — 200℃

Table 106

molding material: HIPS resin (HIPS resin by Asahi Chemical Industry Co., Ltd.; Commercial name and grade; Styron 492)

coating ; paint #149

	times of recycle			
test item	0 turn (V material) *2)	1 turn *3)	2 turn *4)	3 turn *5)
B-1		○ no abnormality	○ no abnormality	○ no abnormality
B-2		17 μm	17 μm	17 μm
B-3		HB	HB	HB
B-4	52.4	5.9	5.8	6.1
B-5		100/100	100/100	100/100
B-6		no abnormality	no abnormality	no abnormality
B-7		100/100	100/100	100/100
B-8		1mm or below	1mm or below	1mm or below
B-9		no abnormality	no abnormality	no abnormality
B-10		100/100	100/100	100/100
B-11		1mm or below	1mm or below	1mm or below
B-12		no abnormality	no abnormality	no abnormality
B-13		100/100	100/100	100/100
B-14		1mm or below	1mm or below	1mm or below
B-15		no abnormality	no abnormality	no abnormality
B-16		success	success	success
B-17	ΔE=0.98	ΔE=0.20	ΔE=0.22	ΔE=0.19
C-1	1.06	1.06	1.063	1.066
C-2	83.7	82.9	82.8	82.5
C-3	104.4	104.8	104.2	104.1
C-4	3.2	3.5	3.7	3.9
C-7	302	313	313	314
C-8	46	47	42	35
C-9	538	543	558	585
C-10	24900	23600	23800	23000
C-11	6.5	5.7	4.9	4.6
C-12	80	80	81	83
C-14	0.05	0.06	0.06	0.02

note)

(molding conditions; molding temperature and moldi machine are those of Nikko J100EP)

Physical properties; 220℃—220℃—200℃—180℃

Table 107

molding material: HIPS resin (HIPS resin by Asahi Chemical Industry Co., Ltd.; Commercial name and grade; Styron 492)

coating ; paint #151

	times of recycle			
test item	0 turn (V material) *2)	1 turn *3)	2 turn *4)	3 turn *5)
B-1		○ no abnormality	○ no abnormality	○ no abnormality
B-2		17 μm	17 μm	17 μm
B-3		HB	HB	HB
B-4	52.1	4.9	4.8	5.7
B-5		100/100	100/100	100/100
B-6		no abnormality	no abnormality	no abnormality
B-7		100/100	100/100	100/100
B-8		1mm or below	1mm or below	1mm or below
B-9		no abnormality	no abnormality	no abnormality
B-10		100/100	100/100	100/100
B-11		1mm or below	1mm or below	1mm or below
B-12		no abnormality	no abnormality	no abnormality
B-13		100/100	100/100	100/100
B-14		1mm or below	1mm or below	1mm or below
B-15		no abnormality	no abnormality	no abnormality
B-16		success	success	success
B-17	ΔE=0.89	ΔE=0.99	ΔE=1.11	ΔE=1.09
C-1	1.06	1.06	1.062	1.065
C-2	83.7	83	84.4	83
C-3	104.4	104.8	104.1	103.6
C-4	3.2	3.4	3.6	3.9
C-7	302	316	314	324
C-8	46	44	40	36
C-9	538	547	553	567
C-10	24900	23600	23400	23200
C-11	6.5	5.6	4.9	4.7
C-12	80	80	81	79
C-14	0.05	0.04	0.04	0.02

note)

(molding conditions; molding temperature and moldi machine are those of Nikko J100EP)

Physical properties; 220℃—220℃—200℃—180℃

Table 109

molding material: HIPS resin (HIPS resin by Asahi Chemical Industry Co., Ltd.: Commercial name and grade; Styron 492)
coating ; (10:1) urethane paint

	times of recycle			
test item	0 turn (V material) *2)	1 turn *3)	2 turn *4)	3 turn *5)
B-1		○ no abnormality	○ no abnormality	○ no abnormality
B-2		17 μm	17 μm	17 μm
B-3		HB	HB	HB
B-4	52	35.6	34.2	35
B-5		1mm or below	1mm or below	1mm or below
B-6		no abnormality	no abnormality	no abnormality
B-7		100/100	100/100	100/100
B-8		1mm or below	1mm or below	1mm or below
B-9		no abnormality	no abnormality	no abnormality
B-10		100/100	100/100	100/100
B-11		1mm or below	1mm or below	1mm or below
B-12		no abnormality	no abnormality	no abnormality
B-13		100/100	100/100	100/100
B-14		1mm or below	1mm or below	1mm or below
B-15		no abnormality	no abnormality	no abnormality
B-16		success	success	success
B-17	ΔE=0.89	ΔE=1.05	ΔE=1.22	ΔE=1.11
C-1	1.06	1.059	1.06	1.062
C-2	83.7	83.8	83.9	80
C-3	104.4	103.4	101.9	100.9
C-4	3.2	3.8	4.2	4.6
C-7	302	316	319	325
C-8	46	25	21	18
C-9	538	563	581	585
C-10	24900	23500	23900	23200
C-11	6.5	5.2	4.3	3.7
C-12	80	81	82	84
C-14	0.05	0.05	0.05	0.02

note)
(molding conditions; molding temperature and moldi machine are those of Nikko J100EP)
Physical properties; 220℃—220℃—200℃—180℃

Table 110

molding material: HIPS resin (HIPS resin by Asahi Chemical Industry Co., Ltd.; Commercial name and grade; Styron 492)

coating ; (4:1) urethane paint

	times of recycle			
test item	0 turn (V material) *2)	1 turn *3)	2 turn *4)	3 turn *5)
B-1		○ no abnormality	○ no abnormality	○ no abnormality
B-2		17 μm	17 μm	17 μm
B-3		HB	HB	HB
B-4	55.6	21.5	22	23.8
B-5		100/100	100/100	100/100
B-6		no abnormality	no abnormality	no abnormality
B-7		100/100	100/100	100/100
B-8		1mm or below	1mm or below	1mm or below
B-9		no abnormality	no abnormality	no abnormality
B-10		100/100	100/100	100/100
B-11		1mm or below	1mm or below	1mm or below
B-12		no abnormality	no abnormality	no abnormality
B-13		100/100	100/100	100/100
B-14		1mm or below	1mm or below	1mm or below
B-15		no abnormality	no abnormality	no abnormality
B-16		success	success	success
B-17	ΔE=0.95	ΔE=1.44	ΔE=1.45	ΔE=1.39
C-1	1.06	1.061	1.063	1.065
C-2	83.7	84.2	82.2	79.5
C-3	104.4	101.8	100.8	99.2
C-4	3.2	3.8	4.3	4.8
C-7	302	312	318	317
C-8	46	23	20	18
C-9	538	565	564	574
C-10	24900	23100	23100	22300
C-11	6.5	5.3	4.3	3.8
C-12	80	81	83	85
C-14	0.05	0.04	0.02	0.03

note)

(molding conditions; molding temperature and moldii machine are those of Nikko J100EP)

Physical properties; 220℃—220℃—200℃—180℃

Table 111

molding material; resin (styrene modified PPO(E) resin by Asahi Chemical Industry Co., Ltd.; Commercial name and grade; Xyron 100Z)
coating ; paint #149

	times of recycle			
test item	0 turn (V material) *2)	1 turn *3)	2 turn *4)	3 turn *5)
B-1		○ no abnormality	○ no abnormality	○ no abnormality
B-2		17 μm	17 μm	17 μm
B-3		HB	HB	HB
B-4	16.7	6.1	5.2	5.5
B-5		100/100	100/100	100/100
B-6		no abnormality	no abnormality	no abnormality
B-7		100/100	100/100	100/100
B-8		1mm or below	1mm or below	1mm or below
B-9		no abnormality	no abnormality	no abnormality
B-10		100/100	100/100	100/100
B-11		1mm or below	1mm or below	1mm or below
B-12		no abnormality	no abnormality	no abnormality
B-13		100/100	100/100	100/100
B-14		1mm or below	1mm or below	1mm or below
B-15		no abnormality	no abnormality	no abnormality
B-16		success	success	success
B-17	ΔE=7.55	ΔE=0.25	ΔE=0.31	ΔE=0.29
C-1	1.11	1.119	1.121	1.123
C-2	83.6	84.7	85.2	82.2
C-3	104.2	103.6	103.9	104.3
C-6	53.8	60.4	66.1	66.2
C-7	334	339	343	377
C-8	50	54	41	41
C-9	609	627	629	656
C-10	25600	26100	26300	24500
C-11	12.2	10.9	10.5	10.2
C-12	117	116	117	117
C-14	0.08	0.08	0.06	0.07

note)
(molding conditions; molding temperature and moldii machine are those of Nikko J100EP)
Physical properties; 220℃—220℃—200℃—180℃

Table 112

molding material; r sin (styrene modified PPO(E) resin by Asahi Chemical Industry Co., Ltd.; Commercial name and grade; Xyron 100Z)

no coating

	times of recycle			
test item	0 turn (V material) *2)	1 turn *3)	2 turn *4)	3 turn *5)
C-1	1.11	1.114	1.115	1.114
C-2	83.6	83.4	82.7	82.6
C-3	104.2	104.1	103.7	104.5
C-6	53.8	60.1	63.7	62.3
C-7	334	341	340	375
C-8	50	49	42	36
C-9	609	641	629	655
C-10	25600	27000	26100	24500
C-11	12.2	11.1	10.5	10.4
C-12	117	119	118	117
C-14	0.08	0.14	0.08	0.12

note)

(molding conditions; molding temperature and moldi machine are those of Nikko J100EP)

Physical properties; 220°C—220°C—200°C—180°C

Table 114

molding material; resin (flame-retardant HIPS resin by Asahi Chemical Industry; Commercial name and grade; Styron VS741)

no coating

	times of recycle			
test item	0 turn (V material) *2)	1 turn *3)	2 turn *4)	3 turn *5)
C-1	1.17	1.171	1.17	1.17
C-2	79.2	79.7	80.8	78.6
C-3	100.5	100.5	100.8	99.7
C-5	9.1	10.2	10.1	10
C-7	213	210	225	224
C-8	41	41	39	36
C-9	389	385	368	387
C-10	23900	23900	22300	22000
C-11	7.5	7.5	6.7	6.7
C-13	60	61	64	63
C-14	0.15	0.13	0.02	0.03

note)

(molding conditions; molding temperature and moldi machine are those of Nikko J100EP)

Physical properties; 200°C—200°C—180°C—160°C

Table 113

molding material: r sin flam -retardant HIPS resin by Asahi Ch mical Industry Co., Ltd; Commercial nam and grad ; Styron VS741)

coating ; paint #149

	times of recycle			
test item	0 turn (V material) *2)	1 turn *3)	2 turn *4)	3 turn *5)
B-1		○ no abnormality	○ no abnormality	○ no abnormality
B-2		17 μm	17 μm	17 μm
B-3		HB	HB	HB
B-4	58	5.1	5.8	5.8
B-5		100/100	100/100	100/100
B-6		no abnormality	no abnormality	no abnormality
B-7		100/100	100/100	100/100
B-8		1mm or below	1mm or below	1mm or below
B-9		no abnormality	no abnormality	no abnormality
B-10		100/100	100/100	100/100
B-11		1mm or below	1mm or below	1mm or below
B-12		no abnormality	no abnormality	no abnormality
B-13		100/100	100/100	100/100
B-14		1mm or below	1mm or below	1mm or below
B-15		no abnormality	no abnormality	no abnormality
B-16		success	success	success
B-17	ΔE=6.89	ΔE=0.21	ΔE=0.28	ΔE=0.22
C-1	1.17	1.172	1.173	1.175
C-2	79.2	79.4	79.5	78.6
C-3	100.5	100.1	99.7	100
C-5	9.1	9.8	10.5	10.2
C-7	213	222	227	225
C-8	41	44	46	38
C-9	389	387	378	383
C-10	23900	22900	22400	22300
C-11	7.5	7.3	6.8	6.7
C-13	60	60	64	63
C-14	0.15	0.16	0.02	0.03

note)

(molding conditions; molding temperature and moldi machine are those of Nikko J100EP)

Physical properties; 200℃—200℃—180℃—160℃

Table 115

molding material: resin (flame-retardant ABS resin by Asahi Chemical Industry Co., Ltd.; Commercial name and grade; Stylac VA58)

coating ; paint #149

test item	times of recycle		
	0 turn (V material) *2)	1 turn *3)	2 turn *4)
B-1		○ no abnormality	○ no abnormality
B-2		17 μm	17 μm
B-3		HB	HB
B-4	82.1	5.1	6.1
B-5		100/100	100/100
B-6		no abnormality	no abnormality
B-7		100/100	100/100
B-8		1mm or below	1mm or below
B-9		no abnormality	no abnormality
B-10		100/100	100/100
B-11		1mm or below	1mm or below
B-12		no abnormality	no abnormality
B-13		100/100	100/100
B-14		1mm or below	1mm or below
B-15		no abnormality	no abnormality
B-16		success	success
B-17	ΔE=6.31	ΔE=0.22	ΔE=0.21
C-1	1.119	1.201	1.202
C-2	82.7	82.4	82.3
C-3	103.5	103.1	103.1
C-5	2.8	3.3	3.3
C-7	438	438	444
C-8	9	8	8
C-9	738	747	743
C-10	26200	25100	25000
C-11	9.5	8.6	7.4
C-12	110	111	110
C-14	0.13	0.17	0.07

note)

(molding conditions; molding temperature and moldii machine are those of Nikko J100EP)

Physical properties; 220°C—220°C—200°C—180°C

Table 116

molding material: resin (flame-retardant ABS resin by Asahi Ch mical Industry Co., Ltd; Commercial name and grade; Stylac VA58)

no coating

test item	times of recycle			
	0 turn (V material) *2)	1 turn *3)	2 turn *4)	3 turn *5)
C-1	- 1.119	1.119	1.197	
C-2	82.7	83.2	82.4	
C-3	103.5	103.5	103.9	
C-4	2.8	3.3	3.4	
C-7	438	434	445	
C-8	9	9	8	
C-9	738	740	734	
C-10	26200	25200	24600	
C-11	9.5	8.6	7.6	
C-12	110	111	110	
C-14	0.13	0.16	0.08	

note)

(molding conditions; molding temperature and moldi machine are those of Nikko J100EP)

Physical properties; 220℃—220℃—200℃—180℃

Table 128

raw material (commercial name and grade)	rate (weight(kg))
styrene modified acrylic resin by Mitsubishi Rayon Co., Ltd. (commercial name and grade; DIANAL BR-52)	100
titanium oxide by FURUKAWA CO., LTD. (commercial name and grade; FR-41)	24
carbon black by Mitsubishi chemical Corporation (commercial name and grade; MA-100)	0.03
iron oxide yellow by Titan Kogyo K.K. (commercial name and grade; TAROX LL-XL0)	0.15
calcium carbonate by Maruo Calcium Co., Ltd. (commercial name and grade; MC-T)	25
surface conditioner by Monsanto Co., Ltd. (commercial name and grade; MODEFLOW POWDER	1

Table 117

molding material; resin (flame-retardant ABS resin by Ube Cycon, Ltd;
Commercial name and grade; Cycolac ZFJ12)

coating ; paint #149

test item	times of recycle		
	0 turn (V material) *2)	1 turn *3)	2 turn *4)
B-1		○ no abnormality	○ no abnormality
B-2		17 μm	17 μm
B-3		HB	HB
B-4	88.6	7	6.8
B-5		100/100	100/100
B-6		no abnormality	no abnormality
B-7		100/100	100/100
B-8		1mm or below	1mm or below
B-9		no abnormality	no abnormality
B-10		100/100	100/100
B-11		1mm or below	1mm or below
B-12		no abnormality	no abnormality
B-13		100/100	100/100
B-14		1mm or below	1mm or below
B-15		no abnormality	no abnormality
B-16		success	success
B-17	ΔE=6.01	ΔE=0.19	ΔE=0.29
C-1	1.162	1.165	1.166
C-2	80	81	80.7
C-3	102.2	103.3	103.1
C-5	3	3.3	3.3
C-7	381	401	407
C-8	18	17	19
C-9	659	690	697
C-10	26000	24700	24600
C-11	11.9	11.2	10.9
C-12	110	109	110
C-14	0.11	0.21	0.08

note)

(molding conditions; molding temperature and moldi machine are those of Nikko J100EP)

Physical properties; 220°C — 220°C — 200°C — 180°C

Table 118
molding material; resin (flame-retardant ABS resin by Ube Cycon, Ltd;
Commercial name and grade; Cycolac ZFJ12)
no coating

	times of recycle		
test item	0 turn (V material) *2)	1 turn *3)	2 turn *4)
C-1	1.162	1.164	1.163
C-1			
C-2	80..0	80.6	80.3
C-3	102.2	102.4	103.4
C-5	3	3.2	3.2
C-7	381	391	403
C-8	18	19	19
C-9	659	683	693
C-10	26000	26700	24300
C-11	11.9	11.5	11.6
C-12	110	111	110
C-14	0.11	0.12	0.08

note)
(molding conditions; molding temperature and moldi machine are those of Nikko J100EP)
Physical properties; 220°C—220°C—200°C—180°C

Table 122
molding material; resin (PP resin by Japan Polyolefins Co., Ltd.;
Commercial name and grade; MK454B)
no coating

	times of recycle		
test item	0 turn (V material) *2)	1 turn *3)	2 turn *4)
C-1	0.953	0.951	0.95
C-2	75.5	72.2	70.8
C-3	151.8	151.4	153.2
C-5	21.9	22.2	25.2
C-7	292	291	305
C-8	147	116	37
C-9	452	449	462
C-10	22200	22100	23600
C-11	7	7.2	6.1
C-12	97	97	96
C-14	0.01	0.02	0.01

note)
(molding conditions; molding temperature and moldi machine are those of Nikko J100EP)
Physical properties; 200°C—200°C—180°C—160°C

Table 121
molding material; resin (PP resin by Japan Polyolefin C ., Ltd.;
Commercial name and grade; MK454B)
coating ; paint #132

	times of recycle		
test item	0 turn (V material) *2)	1 turn *3)	2 turn *4)
B-1		○ no abnormality	○ no abnormality
B-2		17 μm	17 μm
B-3		HB	HB
B-4	20.7	25.8	26.7
B-5		100/100	100/100
B-6		no abnormality	no abnormality
B-7		100/100	100/100
B-8		1mm or below	1mm or below
B-9		no abnormality	no abnormality
B-10		100/100	100/100
B-11		1mm or below	1mm or below
B-12		no abnormality	no abnormality
B-13		100/100	100/100
B-14		1mm or below	1mm or below
B-15		no abnormality	no abnormality
B-16		success	success
B-17	ΔE=2.80	ΔE=0.89	ΔE=0.88
C-1	0.953	0.953	0.953
C-2	75.5	72.2	72.2
C-3	151.8	151.8	151.9
C-5	21.9	21.1	23.9
C-7	292	294	304
C-8	147	68	51
C-9	452	444	459
C-10	22200	21800	22000
C-11	7	6.7	5.6
C-12	97	98	98
C-14	0.01	0.01	0.01

note)
(molding conditions; molding temperature and moldi machine are those of Nikko J100EP)
Physical properties; 200℃—200℃—180℃—160℃

Table 119
molding material; resin (PC/ABS resin by GE Japan Ltd;
Commercial name and grade; Cycoroy C6200)
coating ; paint #149

	times of recycle	
test item	0 turn (V material) *2)	1 turn *3)
B-1		○ no abnormality
B-2		17 μm
B-3		HB
B-4	95.6	6
B-5		100/100
B-6		no abnormality
B-7		100/100
B-8		1mm or below
B-9		no abnormality
B-10		100/100
B-11		1mm or below
B-12		no abnormality
B-13		100/100
B-14		1mm or below
B-15		no abnormality
B-16		success
B-17	ΔE=2.80	ΔE=0.28
C-1	1.196	1.198
C-2	89.7	90.5
C-3	111.9	112.6
C-5	79.4	96.8
C-7	606	611
C-8	141	126
C-9	1033	1056
C-10	29400	30000
C-12	13.9	11.4
C-12	123	123
C-14	0.07	0.05

note)
(molding conditions; molding temperature and molding machine are those of Nikko J100EP)
Physical properties; 240℃-240℃-220℃—200℃

Table 120

molding mat rial; resin (PC/ABS resin by GE Japan Ltd;
Commercial name and grade; Cycoroy C6200)

no coating

	times of recycle	
test item	0 turn (V material) *2)	1 turn *3)
C-1	1.196	1.125
C-2	89.7	89.4
C-3	111.9	112.5
C-5	79.4	99.7
C-7	606	608
C-8	141	105
C-9	1033	1058
C-10	29400	29000
C-11	13.9	10.8
C-12	123	124
C-14	0.07	0.04

note)

(molding conditions; molding temperature and molding machine are those of Nikko J100EP)

Physical properties; 240°C-240°C-220°C—200°C

Table 131

materials item	compatibilizing (or miscibilizing) agent; MODIPER A4410 is added at the ratio of 5wt%	no compatibilizing (or miscibilizing) agent
Izod impact strength (kg cm/cm)	17.7	13.6

Table 132

materials item	compatibilizing (or miscibilizing) agent; MODIPER A4410 is added at the ratio of 5wt%	no compatibilizing (or miscibilizing) agent
Izod impact strength (kg cm/cm)	6.6	3.1

Table123-1

Table showing blend ratio (proportion) and recyclability of paint.

paint / sign	#101	#102	#104	#122	#116	#118	#119	#121	#122	#123	#124	#126
A-1	101	102	104	112	116	118	119	121	122	123	124	126
A-2	54	60	50	90	68	68	68	68	68	68	68	68
A-3	8	8	8	8	8	8	8	8	8	8	8	8
A-4	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
A-5	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
A-6	6	6	6	6	6	6	6	6	6	6	6	6
A-7	3	3	3	3	3	3	3	3	3	3	3	3
A-8	15	15	20	20	20	20	20	20	20	20	20	20
A-9	11	5	15	11	11	11	11	11	11	11	11	11
A-10	-	-	-	-	-	-	-	-	-	-	-	-
A-11	3	3	3	-	3	3	3	3	3	3	3	3
A-12	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
A-13	100.3	100.3	88.3	121.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3
A-14	S1	S1	S3	S3	S1	S3	S3	S1	S1	S1	S1	S1
A-15	○	○	○	-	○	○	○	○	○	○	○	○
A-16	○	○	○	-	○	○	○	○	○	○	○	○
A-17	○	○	○	-	○	○	○	○	○	○	○	○
A-18	○	○	○	-	○	○	○	○	○	○	○	○
A-19	×	×	-	-	○	○	○	×	×	×	×	×
A-20	-	-	-	○	-	-	-	×	-	×	×	×
A-21	-	-	-	-	-	-	-	-	-	-	-	-

note)
Signs are refered to notes described in tables 98-1, 99-1 and 123.

Table123-2

Table showing blend ratio (proportion) and recyclability of paint.

paint / sign	#129	#132	#133	#138	#140	#142	#144	#10	#149	#20	#30
A-1	129	132	133	138	140	142	144	10	149	20	30
A-2	68	54	54	54	54	54	68	60	60	17.1	17.1
A-3	8	8	8	8	8	8	8	8	8	8	8
A-4	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
A-5	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
A-6	6	6	6	6	6	6	6	6	6	6	6
A-7	3	3	3	3	3	3	3	3	3	3	3
A-8	10	15	15	15	15	15	20	15	15	38.95	32.95
A-9	10	11	11	11	11	11	–	5	5	41.95	41.95
A-10	–	–	–	–	–	–	–	–	–	10	10
A-11	30	3	3	3	3	3	20	3	3	–	–
A-12	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
A-13	118.3	100.3	100.3	100.3	100.3	100.3	108.3	100.3	100.3	125.36	119.36
A-14	S4	S3	S3	S3	S3	S3	S2	S2	S1	S1	S1
A-15	–	–	–	–	○	○	–	○	○	○	×
A-16	–	–	–	–	○	○	–	○	○	○	×
A-17	–	–	–	○	○	–	–	○	○	×	○
A-18	–	–	–	○	○	–	○	○	○	–	–
A-19	–	–	–	–	×	–	–	×	×	–	–
A-20	–	○	○	–	×	–	–	×	×	–	–
A-21	○	–	–	–	–	–	–	–	–	–	–

note)

Signs are refered to notes described in tables 98-1, 99-1 and 123.

Tabel 123-3

Table showing blend ratio (proportion) and recyclability of paint.

item	paint, ink	paint #40	paint #50	paint #12 7	paint #12 8	paint #15 1	paint #10 Mt	paint #14 9Mt	paint #12 1Pw	ink #15	ink #25	ink #35	ink #11 3	ink #13 2
	A-1	40	149	127	128	151	10	149	121	10	20	30	113	132
	A-2	18.9	54	100	100	100	60	60	100	35	10.5	10.5	50	50
	A-3	10	–	–	–	–	–	–	24	–	–	–	–	–
	A-4	0.06	–	–	–	–	–	–	0.15	–	–	–	–	–
rate	A-5	0.01	–	–	–	–	–	–	0.03	–	–	–	1	1
	A-6	6	–	–	–	–	–	–	25	10	10	10	20	20
(mount)	A-7	3.5	10	–	–	–	–	–	–	4	4	4	14	14
	waste toner	–	10	–	–	–	–	–	–	–	–	–	–	–
wt%	D-1	–	–	2	2	2	–	–	–	–	–	–	–	–
	D-2	–	–	15	15	15	–		–	–	–	–	–	–
	D-3	–	–	–	–	–	6	6	–	–	–	–	–	–
	D-4	–	–	–	–	–	1	1	–	–	–	–	–	–
	D-5	–	–	–	–	–	–	–	1	–	–	–	–	–
	D-6	–	–	–	–	–	–	–	–	12	12	12	–	–
	D-7	–	–	–	–	–	–	–	–	0.3	0.3	0.3	–	–
	D-8	–	–	–	–	–	–	–	–	–	–	–	5	5
	A-8	–	15	–	–	–	12	12	–	0	12.3	12.3	–	–
	A-9	–	11	–	–	–	–	–	–	10	10	10	10	10
	A-12	–	0.3	–	–	–	–	–	–	–	–	–	0.3	0.3
	D-9	44.4	–	–	–	–	–	–	–	–	–	–	–	–
	D-10	9.1	–	–	–	–	–	–	–	–	–	–	–	–
solvent dt al	purified water	2.8	–	–	–	–	–	–	–	–	–	–	–	–
	D-11	5	–	0	0	5	–	–	–	–	–	–	–	–
	D-12	0.2	–	–	–	–	0.2	0.2	–	–	–	–	–	–
wt%	xylene	–	–	5	5	0	–	–	–	–	–	–	–	–
	D-13	–	–	7	7	7	–	–	–	–	–	–	–	–
	D-14	–	–	–	–	–	21	21	–	–	–	–	–	–
	A-13	100	100	129	129	129	100	100	150	71.3	71.3	71.3	100	100
	A-14	S1	S1	de-ionized water	de-ionized water	de-ionized water	S1	S1	–	S2	S1	S1	S1	S1
	A-15	–	○	○	○	○	○	○	○	○	○	×	–	–
aptitude	A-16	–	○	○	○	○	○	○	○	○	○	×	–	–
for	A-17	–	○	○	○	○	○	○	○	○	×	○	–	–
recycle	A-18	–	○	○	○	○	○	○	○	○	–	–	–	–
	A-19	–	–	×	×	–	–	–	–	×	–	–	–	–
	A-20	–	–	×	×	–	–	–	–	×	–	–	○	○
	A-21	○	–	–	○	–	–	–	–	–	–	–	–	–

note)

From D-1 to D-10 in table 123-3, D-1; CS-2 by Chisso Corp., D-2; LIOCONC BLACK by Toyo Ink Manufucturing Co., Ltd., D-3; ALUMIPASTE 66NL-B by Toyo Aluminum K.K., D-4; DISPALON 6900-10X by Kusumoto Kasei K.K., D-5; MODEFLOW POWDER III by by Monsanto Corp., D-6; red oxide commercial name and grad TODA COLOR 100ED, D-7 by Toda Kogyo KK., D-7; BENTONE SD-1 by RHEOX Inc., D-8; iron oxide yellow commercial name and grade TAROX LL-LXO by Titan Kogyo K.K., D-9; methanol, D-10; normal butanol, D-11; butylcellosolv , D-12; homogenol L-100 by Kao Corp., D-13; deionic water, D-14; butanol, respectively show.

The other signs are refered to notes in table 98-1 and 123.

Table 123—4
Sign table for showing raw materials of paint and combinations for recycle.

raw materials, names of makers, grades and so on		sign
	resin for paint No*34)	A-1
rate (mount) wt%	resin for paint	A-2
	titanium oxide by FURUKAWA CO., LTD. (commercial name and grade; FR-41)	A-3
	iron oxide yellow by Titan Kogyo K.K. (commercial name and grade; TAROX LL-XLO)	A-4
	carbon black by Mitsubishi Chemical Co., Ltd. (commercial name and grade; MA-100)	A-5
	calcium carbonate by MARUO CALCIUM CO., LTD. (commercial name and grade; MC-T)	A-6
	talc by TAKEHARA KAGAKU KOGYO CO., LTD. (commercial name and grade; TT talc)	A-7
solvent and so on wt%	toluene	A-8
	butyl acetate	A-9
	cyclohexanone	A-10
	isopropyl alcohol	A-11
	surface conditioner by MONSANTO CO., LTD. (commercial name and grade; MODEFLOW)	A-12
	total	A-13
	thinner No for dilution	A-14
property for recycle	HIPS resin	A-15
	styrene modified PPO(E) resin	A-16
	ABS resin	A-17
	PC resin	A-18
	PVC resin	A-19
	PP resin	A-20
	nylon resin	A-21

note)
*34) details of resin for paint
(sorts, makers, commercial name and grades are the same as table 103.)
In each table belong to table 123, "○" is recyclable combination, "×" is not recyclable combination, "−" is not clear combination in recyclability, respectively show.
ABS resin includes blend polymer comprising base resin of AS resin, AES resin, AAS resin including AS resin.
HIPS resin includes blend polymer comprising base resin of PS resin as ABS resin.

Table 124-1

result of evaluation on coatability and film property

	#101	#102	#104	#112	#116	#118	#119	#121	#122	#123	#124	#126	#128	#129	#132
1. coatability (appearance; luster, surface irregularity, wrinkle, clouding, pin-holl, and so on)	Luster, surface irregularity, wrinkle, clouding, pin-holl, and so on are not found.	←	←	←	←	←	←	←	←	←	←	←	←	←	←
2. Film property															
2-1. Pencil hardness test	HB or over	←	←	←	←	←	←	←	←	←	←	←	←	←	←
2-2. Cross-hatch test	no abnormality 100/100	←	←	←	←	←	←	←	←	←	←	←	←	←	←
2-3. Hot water dip test	no abnormality 100/100	←	←	←	←	←	←	←	←	←	←	←	←	←	←
2-4. Humidity test	no abnormality 100/100	←	←	←	←	←	←	←	←	←	←	←	←	←	←
3. Molding material used in evaluating coatability and	ABS resin moldings	←	←	PP resin moldings	ABS resin moldings	←	←	←	←	←	←	←	←	PA6 resin moldings	PP resin moldings

note) ← means the same as left.

Table 124-2 result of evaluation on coatability and film property

paint	#127	#133	#138	#140	#142	#144	#149	#10	#20	#30	#40	#50	#10Mt	#151
1. coatability (appearance; luster, surface irregularity, wrinkle, clouding, pin-holl, and so on)	Luster, surface irregularity, wrinkle, clouding, pin-holl, and so on are not found.	←	←	←	←	←	←	←	←	←	←	←	←	←
2. Film property														
2-1. Pencil hardness test	HB or over	←	←	←	←	←	←	←	←	←	←	←	←	←
2-2. Cross-hatch test	no abnormality 100/100	←	←	←	←	←	←	←	←	←	←	←	←	←
2-3. Hot water dip test	no abnormality 100/100	←	←	←	←	←	←	←	←	←	←	←	←	←
2-4. Humidity test	no abnormality 100/100	←	←	←	←	←	←	←	←	←	←	←	←	←
3. Molding material used in evaluating coatability and	ABS resin moldings	PP resin moldings	ABS resin moldings	←	HIPS resin moldings	PC resin moldings	ABS resin moldings	←	HIPS resin moldings	ABS resin moldings	PA6 resin moldings	ABS resin moldings	←	←

note) ← means the same as left.

Table 125-1 result of evaluation on moldability

paint item	#101	#102	#104	#112	#116	#118	#119	#121	#122	#123	#124	#126	#127	#128	#129
1. Problem on molding	nothing particularly	←	←	←	←	←	←	←	←	←	←	←	←	←	←
2. Silver streak failure incidence rate (%)	0.5	0.35	0.3	0	0.8	1.3	0.6	0.8	0.6	0.9	0.5	0.9	0.2	0.5	0
3. Scorch failure	no occurance	←	←	←	←	←	←	←	←	←	←	←	←	←	←
4. Mottle	no occurance	←	←	←	←	←	←	←	←	←	←	←	←	←	←
5. Incidence rate of failure by contamination or foreign matter (%)	1	1	1.3	0.4	1	1.2	1.1	1.3	1.5	1	1	1.2	1.3	0.9	1.6
6. Cracks incidence rate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7. Short failure occurance	no occurance	←	←	←	←	←	←	←	←	←	←	←	←	←	←
8. Fluidity of resin melt	no occurance	←	←	←	←	←	←	←	←	←	←	←	←	←	←
9. Molding materials used in testing moldability	ABS resin	ABS resin	ABS resin	PP resin	ABS resin	ABS resin	ABS resin	ABS resin	ABS resin	ABS resin	ABS resin	ABS resin	ABS resin	ABS resin	PA6 resin

Table 125-2 result of evaluation on moldability

paint item	#132	#133	#138	#140	#142	#144	#149	#10	#20	#30	#40	#50	#10Mt	#149Mt	#151
1. Problem on molding	nothing particularly	←	←	←	←	←	←	←	←	←	←	←	←	←	←
2. Silver streak failure incidence rate (%)	0	0.5	0.8	0.3	0.2	1.2	0	0.8	0.6	0.3	0.9	0.7	0.4	0.2	0.5
3. Scorch failure	no occurance	←	←	←	←	←	←	←	←	←	←	←	←	←	←
4. Mottle	no occurance	←	←	←	←	←	←	←	←	←	←	←	←	←	←
5. Incidence rate of failure by contamination or foreign matter (%)	0.7	0.6	0.9	1.1	0.4	2.6	0.8	0.6	1.3	0.8	0.5	0.4	10.6	1.5	0.9
6. Cracks incidence rate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7. Short failure occurance	no occurance	←	←	←	←	←	←	←	←	←	←	←	←	←	←
8. Fluidity of resin melt	no occurance	←	←	←	←	←	←	←	←	←	←	←	←	←	←
9. Molding materials used in testing moldability	PP resin	PP resin	ABS resin	ABS resin	HIPS resin	PC resin	ABS resin	ABS resin	HIPS resin	ABS resin	PA6 resin	ABS resin	ABS resin	ABS resin	ABS resin

nlte) "failure by contamination or foreign matter" occurs, on molding obtained by molding repelletized molding which is molding made of virgin material and which is coated by recyclable coating, at step of recycle test.
"silver streak failure" is molding product having so predetermined level as to cover (decorate) mark thereof by re-coating.

Table 126

valuati n item	evaluati n result
1.paint film ability	
1-1.appearance	bloom, pinhol , blister ar not c nfirm d
2.paint film properties	
pencil hardness test	HB or over
cross hatch test	100/100
cross cut test	1mm or below
hot water dip test	no abnormality 100/100
humidity test	no abnormality 100/100
salt waterdip test	no abnormality 100/100

Test method and others depend on table 8.

Table 127

evaluation item	evaluation result
1.paint film ability	
1-1.appearance	bloom, pinhole, blister are not confirmed
2.paint film properties	
pencil hardness test	HB or over
cross hatch test	100/100
cross cut test	1mm or below
hot water dip test	no abnormality 100/100
humidity test	no abnormality 100/100
salt waterdip test	no abnormality 100/100

Test method and others depend on table 8.

Table 129

evaluation item	evaluation result
1.paint film ability	
1-1.appearance	bloom, pinhole, blister are not confirmed
2.paint film properties	
pencil hardness test	HB or over
cross hatch test	100/100
cross cut test	1mm or below
hot water dip test	no abnormality 100/100
humidity test	no abnormality 100/100
salt waterdip test	no abnormality 100/100

Test method and others depend on table 8.

Table 130

item / time(hr.)	styrene modified PPO(E) resin + paint #149	styrene modified PPO(E) resin + urethane resin (10:1)paint	styrene modified PPO(E) resin + no coating	ABS resin + no coating	flame retardant ABS resin + no coating	PC/ABS resin + no coating
24hr.	0.28	0.34	1.7	0.3	1.05	0.33
48hr.	0.38	0.61	4.73	0.25	2.94	0.95
72hr.	0.26	0.96	7.89	1.73	4.57	0.93
96hr.	0.4	1.23	11.88	1.66	6.04	2.61
192hr.	0.34	1.46	19.75	2.02	14.33	5.63

Table 133

test item	test method	unit	75th example	76th example	77th example	78th example
tensile yield point strength	JIS K 7113	kgf/mm^2	1.5	3.6	4.2	3.6
elongation at tensile break	JIS K 7113	%	4	4	4	4
maximum bending strength	JIS K 7203	kgf/mm^2	2.1 *31)	5.2 *31)	6.9 *32)	5.4 *31)
modulus in flexure	JIS K 7113	kgf/mm^2	257	189	226	190
Izod impact strength (notched, 1/4 inch thickness, room temperature)	JIS K 7110	kg·cm/cm	1	1.3	1.7	1.1

*31) break before the displacement in test piece reaching to 1.5 times of thickness therein

*32) specified deflection bending strength (no break before the displacement in test piece reaching to 1.5 times of thickness therein)

Table 134

item / test (examination) item	molding material ; ABS resin paint ; paint #149			
	fresh molding by virgin material *2)	first recycle *3)	second recycle *4)	third recycle *5)
1-2 mechanical properties				
tensile strength kg/cm²	440	430	426	420
bending strength kg/cm²	670	665	667	671
elongation %	20	19	19	18
modulus in flexure kg/cm²	24000	24000	23800	24100
Izod impact strength kg-cm/cm	16	14.6	14.9	15.1

*2), *3), *4) and *5) correspond to items described in 4th example.

Table 135

item / test (examination) item	molding material ; ABS resin paint ; paint #149			
	fresh molding by virgin material *2)	first recycle *3)	second recycle *4)	third recycle *5)
1-2 mechanical properties				
tensile strength kg/cm²	340	332	326	320
bending strength kg/cm²	550	540	525	516
elongation %	50	46	44	43
modulus in flexure kg/cm²	22500	22600	22800	22900
Izod impact strength kg-cm/cm	7	6.8	7.1	6.9

*2), *3), *4) and *5) correspond to items described in 4th example.

Table 136

item / test (examination) item	molding material; styrene modified PPO(E) resin paint ; paint #149			
	fresh molding by virgin material *2)	first recycle *3)	second recycle *4)	third recycle *5)
1-2 mechanical properties				
tensile strength kg/cm²	370	381	388	391
bending strength kg/cm²	600	614	642	630
elongation %	40	35	41	42
modulus in flexure kg/cm²	23000	22800	23200	23300
Izod impact strength kg-cm/cm	15	13.5	12.6	11.9

*2), *3), *4) and *5) correspond to items described in 4th example.

Table 137

company name	commercial name	paint #10	paint #149	thermosetting urethane coating (10:1) *33)
LION CORPORATION	Mama Lemon original liquid	○	○	○
LION CORPORATION	Mama Lemon (10% solution	○	○	○
Kao Corporation	Liquid Glass Mypet	○	○	○
Kao Corporation	KANTAN MAIPETTO	○	○	○
Taiho Industries Co., Ltd.	DIATEN CLEAN	△	△	△
Sanwa Kogyo Co., Ltd.	CLEAN MASTER	○	○	○
Sanwa Kogyo Co., Ltd.	CLEAN ACE M 148D	○	○	○
Sanwa Kogyo Co., Ltd.	SOYCUT P 172D	×	×	△
Sanwa Kogyo Co., Ltd.	FUSER CLEANER 177D	×	△	△
FUJI XEROX CO., LTD.	DRUM CLEANER V512	×	△	△
FUJI XEROX CO., LTD.	DRUM CLEANER V506	×	△	△

symbols) ○: no change in the film

△: the film was lustered

×: the film was attacked with a chemical to expose a molding surface

*33) thermosetting urethane paint, by Cashoo K.K. (commercial name and grade: Stron # 100)

Table 138

matrix of r cycling properties f thermoplastic resins for constituents of paint and thermoplastic resins for main constituent of moldings

resins for the main constituents of moldings resins for the constituents of paint films	HIPS resin	styrene modified PPO(E) resin	ABS resin	PC resin	vinyl cholo ride resin	nylon resin	PP resin	PE resin
styreneted alkyd	○	○	○	○	×	×	×	×
acrylic resin	○	○	◎	○	×	×	×	×
chlorinated PP	×	×	×	×	×	×	◎	◎
vinyl acetate modified acrylic resin	×	×	○	×	×	×	×	×
phenolic resin	×	×	×	×	×	×	×	×
rosin modified maleic resin	×	×	×	×	×	×	×	×
rosin ester	×	×	×	×	×	×	×	×
rosin modified phenole resin	×	×	×	×	×	×	×	×
vinyl choloride resin	×	×	△	△	◎	×	×	×
polyvinyl butyral	×	×	×	×	×	×	×	×
vinyl choloride/vinyl acetate copolymer	△	×	○	○	○	×	×	×
styrene modified acrylic resin	◎	◎	◎	◎	×	×	×	×
styreneacrylic emulsion	◎	◎	◎	◎	×	×	×	×
acrylic emulsion	○	○	◎	◎	×	×	×	×
poryamide resin	×	△	△	×	×	◎	×	×
urethane emulsion	×	×	×	×	×	×	×	×
epoxy resin	×	×	×	△	×	×	×	×
alkyd resin/nitrocellulose	×	×	○	○	×	×	×	×
thermoplastic acrylic resin/nitrocellulos	×	×	○	×	×	×	×	×
vinyl acetate modified acrylic resin	×	×	○	○	×	×	×	×
aklyd resin	×	×	○	×	×	×	×	×
urethane modified alkyd resin	○	○	○	○	×	×	×	×
chlorinated polyethylene	×	×	×	×	×	×	×	×
water-soluble acrylic resin	○	◎	◎	○	×	×	×	×

symbols)

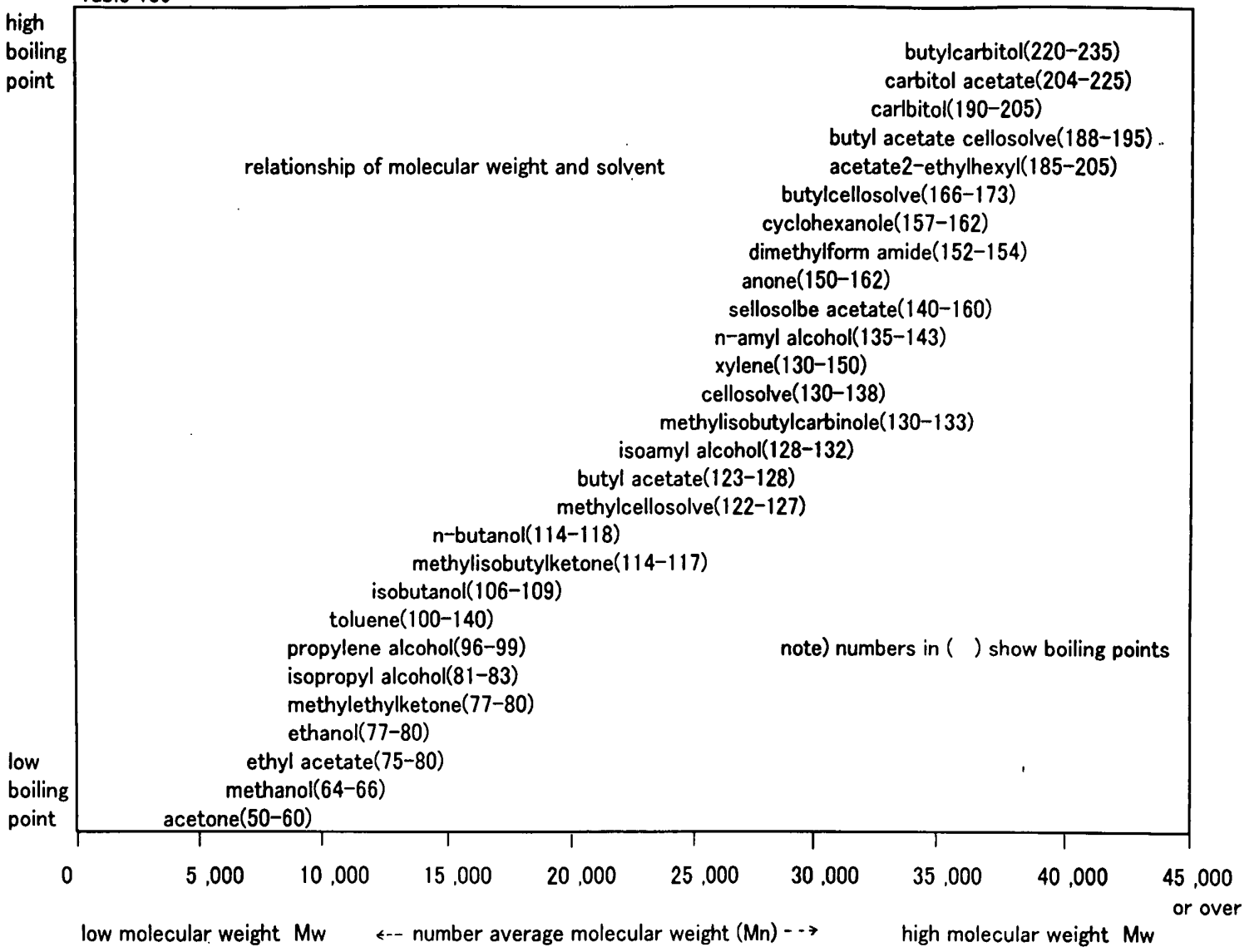
◎: thermoplastic resins constituent of paint film and thermoplastic resin for main constituents of moldings have sufficient to have affinity, and are recyclable combinations

○: thermoplastic resins constituent of paint film and thermoplastic resin for main constituents of moldings have affinity, and are recyclable combinations

△: thermoplastic resins constituent of paint film and thermoplastic resin for main constituents of moldings are combinations which have affinity depending on special conditions of recycle.

×: thermoplastic resins constituent of paint film and thermoplastic resin for main constituents of moldings are combinations which have no affinity.

Table 139


high boiling point
butylcarbitol(220-235)
carbitol acetate(204-225)
carlbitol(190-205)
butyl acetate cellosolve(188-195)
relationship of molecular weight and solvent
acetate2-ethylhexyl(185-205)
butylcellosolve(166-173)
cyclohexanole(157-162)
dimethylform amide(152-154)
anone(150-162)
sellosolbe acetate(140-160)
n-amyl alcohol(135-143)
xylene(130-150)
cellosolve(130-138)
methylisobutylcarbinole(130-133)
isoamyl alcohol(128-132)
butyl acetate(123-128)
methylcellosolve(122-127)
n-butanol(114-118)
methylisobutylketone(114-117)
isobutanol(106-109)
toluene(100-140)
propylene alcohol(96-99)
note) numbers in ( ) show boiling points
isopropyl alcohol(81-83)
methylethylketone(77-80)
ethanol(77-80)
low boiling point
ethyl acetate(75-80)
methanol(64-66)
acetone(50-60)
0
5 ,000
10 ,000
15 ,000
20 ,000
25 ,000
30 ,000
35 ,000
40 ,000
45 ,000 or over
low molecular weight Mw
<-- number average molecular weight (Mn) -->
high molecular weight Mw